TELECOM Review

THE TELECOMS INDUSTRY MEDIA PLATFORM

telecomreview.com

MOBILY: A FRONTRUNNER AMONG LEADING WHOLESALE COMPANIES IN THE MIDDLE EAST

ENG. THAMER ALFADDA,
SVP, Mobily Wholesale & Carriers

The Benefits of Circularity in the Mobile Industry

NTNs and Satellites: Creating Future-Ready Ecosystems for Industries and Consumers

Revolutionizing User Convenience with Ambient Invisible Intelligence

TELECOM Review GROUP

telecomreviewgroup.com

GLOBAL FOOTPRINT
REGIONAL INFLUENCE
DIGITAL REACH

TELECOM Review
THE TELECOM INDUSTRY'S MEDIA PLATFORM
telecomreview.com

TELECOM Review ASIA PACIFIC
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreviewasia.com

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

TELECOM Review AMERICAS
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreviewamericas.com

تيليكوم ريفيو
منصة قطاع الاتصالات والتكنولوجيا
TELECOM Review
telecomreviewarabia.com

TELECOM Review EUROPE
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomrevieweurope.com

TELECOM Review CANADA
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreviewcanada.com

SSC
SUBSEA CABLES
BY TELECOM REVIEW
SUBSEA CONNECTIVITY MEDIA CORRIDOR

TELECOM Review TV
telecomreview.tv

SUMMIT
TELECOM Review
LEADERS' SUMMIT
www.telecomreview.com/summit

TELECOM Review
WEBINARS

TELECOM Review
THE TELECOMS INDUSTRY MEDIA PLATFORM
telecomreview.com

New Brain Chip Implant Project Speeds Up a Major Breakthrough

CIBR and NeuCyber are fast-tracking human trials of Beinao No.1, positioning it to become the world's most widely tested brain chip.

READ MORE

Preserving Tuvalu: How Tech is Keeping a Nation Alive

Tuvalu, a Pacific Island nation comprising nine islands, is confronting the existential threat of rising sea levels by launching the 'Digital Nation' initiative, aiming to preserve its identity, culture, and governance in the digital realm.

READ MORE

World's Smallest Chip Packs a Punch

The world's first 1 nanometer semiconductor microprocessor, WUJI, has arrived earlier than its predicted timeline of 2027.

READ MORE

China Debuts World's First Smart Emergency Rescue Robots

China has unveiled advanced rescue robots boasting quadrupedal, wheeled, and tracked mobility capabilities, enhancing disaster response and battlefield first aid in extreme conditions.

READ MORE

Advanced Haptic Device Simulates Natural Physical Sensations

Northwestern University engineers have developed a wearable haptic device that simulates realistic touch by applying dynamic forces in all directions.

READ MORE

Robotaxis Redefine the Future of Transportation

Self-driving robotaxis will soon begin offering rides in autonomous Toyota Sienna minivans in Atlanta, with plans to expand to multiple cities and thousands of vehicles, revolutionizing urban transportation.

READ MORE

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

Senior Journalists
Elvi Correos
elvi@tracemedia.info

Jonathan Pradhan
jonathan@tracemedia.info

Editorial Team
Christine Ziadeh, Corrine Teng, Clarissa Garcia, Elvi Correos, Jeff Seal, Jessica Bayley, Jonathan Pradhan, Marielena Geagea, Mira Jabbour, Monika Jeleniak, Novie Nuñez, Pia Maria El Kady, Sherizze Acot

Copy Editor
Jessica Bayley

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

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

Responsible Manager
Nada Eid

Chief Marketing Officer
Issam Eid
issam@telecomreviewgroup.com

Operations Director – Group
Anna Chumak

Graphic Designer
Tatiana Issa

Published by

Trace Media Ltd.
Zouk Mikael, Lebanon,
Kaslik Sea Side Road,
Badawi Group Building, 4th Floor,
P.O. Box 90-2113, Jdeidet el Metn
Tel. +961 9 211741
M. +961 70 519 666

Trace Media FZ.LLC.
Dubai Media City, UAE
Building 7, 3rd Floor, Office 341
P.O. Box 502498, Dubai, UAE
Tel. +971 4 4474890
M. +971 55 639 7080

Printing
Gulf News Print

Year 20 | Issue 222

Eng. Thamer Alfadda, SVP, Mobily Wholesale & Carriers

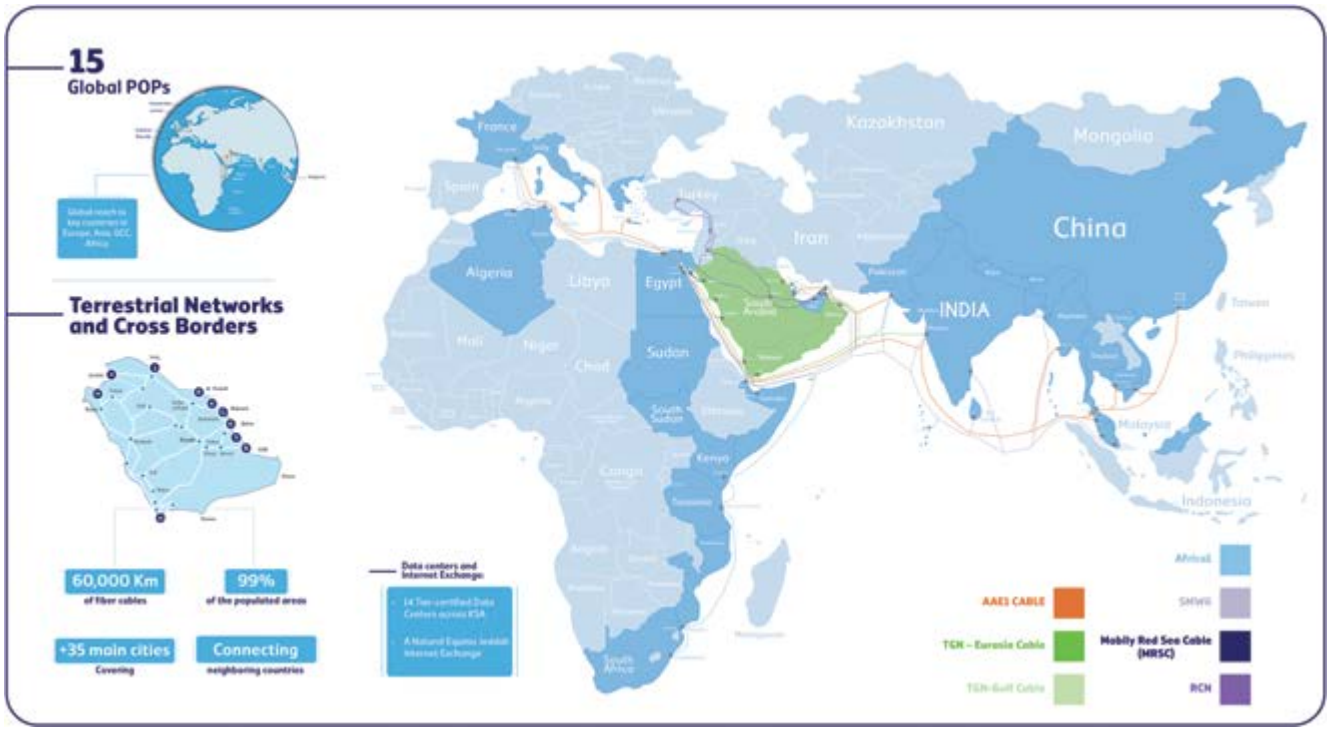
Mobily: A Frontrunner Among Leading Wholesale Companies in the Middle East

Mobily Wholesale has firmly established itself as a key player in both national and international wholesale telecommunications markets through strategic investments, innovation, and a strong customer-centric approach. Its contributions to Saudi Arabia's digital transformation and Vision 2030 underscore the company's role in building world-class infrastructure and delivering future-ready solutions.

As a pioneer in modernizing Saudi Arabia's telecom landscape, Mobily has positioned the Kingdom as a digital leader. A major milestone is the recent upgrade of Mobily's fiber network, significantly boosting high-bandwidth capacity. This advancement supports scalable solutions for artificial intelligence (AI), big data, cloud computing, and machine learning (ML) applications.

Strong Wholesale Growth

In 2024, Mobily's Wholesale Unit delivered strong double-digit year-over-year (YoY) growth, solidifying its role as an important contributor to the company's overall revenue and performance. This growth reflects the Wholesale Unit's commitment to enhancing connectivity, forging strategic partnerships, and supporting the digital ecosystem through infrastructure expansion.



The Wholesale Unit strategically focused on expanding global connectivity by collaborating with industry leaders. Through these initiatives, Mobily reinforced its position as a hub for international connectivity and digital innovation. Key achievements included improved regional connectivity, stronger collaborations following the successful Border Expansion Project, and significantly expanded 5G roaming coverage, enhancing customer experiences (CX) across key markets.

Mobily's Fiber and Subsea Network: Powering the Digital Backbone

Mobily operates one of the most extensive and advanced digital infrastructures in the region, spanning a 60,000-km terrestrial fiber network and six global subsea cable systems. With 15 global points of presence (PoPs), four major landing stations across Saudi Arabia, and nine cross-border connectivity points, Mobily ensures highly resilient, low-latency services tailored to meet growing national and international demand.

The recent upgrade of Mobily's fiber infrastructure marks a transformational step, enabling scalable, high-bandwidth solutions that support the growing needs of artificial intelligence, big data, cloud computing, and machine learning applications.

The Hybrid Digital Corridor: A Regional Game-Changer

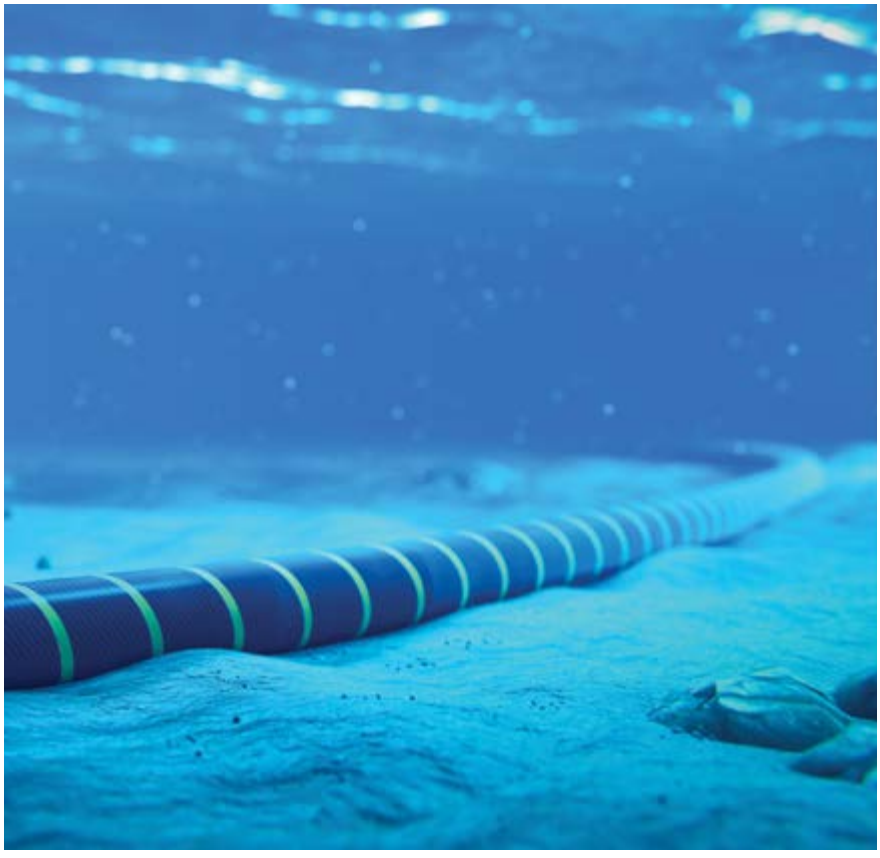
A key milestone in Mobily's strategic evolution is the launch of its Hybrid Digital Corridor, which integrates subsea and terrestrial infrastructure to create a seamless, secure, and redundant data path. This corridor enhances data transmission between the Middle East, Europe, and Africa, offering alternative, resilient routes for hyperscalers, internet service providers (ISPs), over-the-top (OTT) platforms, and international enterprises.

It serves as a reliable alternative to traditional chokepoints, ensuring uninterrupted traffic flow and helping global partners navigate geopolitical and environmental challenges more effectively.

Data Center Leadership and Digital Hub Vision

Mobily's ecosystem includes Tier-certified data centers strategically located across the Kingdom. These centers form the foundation of its role as a trusted provider of critical infrastructure supporting cloud services, AI, the Internet of Things (IoT), and latency-sensitive applications.

> Mobily is committed to advancing Saudi Arabia's digital transformation and strengthening its position as a global digital hub, in line with Vision 2030. Through innovative infrastructure and a customer-first approach, we are redefining regional and global connectivity



> The recent upgrade of Mobily's fiber infrastructure marks a transformational step, enabling scalable, high-bandwidth solutions

The Mobily Digital Hub integrates these data centers with the company's robust terrestrial and subsea network assets. It acts as a vital enabler of secure local and international data exchange, positioning Saudi Arabia as a digital interconnection hub for hyperscalers, content providers, and digital ecosystem players.

Strategic Expansion: Mobily Red Sea Cable (MRSC)

Reinforcing its commitment to cross-border connectivity, Mobily extended its current network, existing cables systems, and extensive international infrastructure to provide more reliable connectivity and meet the rising communication traffic and the large demand for internet services both locally and internationally. Mobily has launched the Mobily Red Sea Cable, the first Saudi-owned submarine cable linking the Kingdom with Egypt. Fully owned by Mobily, and traversing the Red Sea, the cable strengthens the company's digital corridors, providing multiple connectivity options to Europe and bolstering access to other major subsea systems landing in Egypt.

This initiative adds to Mobily's existing investments in global subsea infrastructure and demonstrates its commitment to long-term international capacity growth.

Expanding Market Reach and Capabilities

Mobily's mobile virtual network operator (MVNO) model continues to enable broader market penetration and appeals to diverse demographics. In 2024, Mobily strengthened its MVNO leadership by onboarding Red Bull MOBILE through a six-year agreement. Mobily's reputation as a preferred MVNO partner is built on high-quality services, exceptional customer experience, and continuous investments in infrastructure.

Further enhancing its offerings, Mobily launched two major services in 2024: The Application-to-Person (A2P) Services to automate communications and boost operational efficiency, and the International Direct Dialing Hub and Carrier Hub services to reinforce Mobily's leadership in international voice services and strengthen its robust network infrastructure.

Driving Innovation

Mobily's Wholesale Unit continued to expand its market reach by securing key national and international connectivity agreements in 2024. Strategic collaborations included partnerships with key partners to expand global connectivity, data center capabilities, and digital solution offerings. These efforts, showcased during the Connected World KSA Conference, align with Saudi Arabia's Vision 2030 to position the Kingdom as a global digital hub.

Further strengthening its digital ecosystem, Mobily entered a landmark partnership with Mada to provide innovative and advanced digital solutions in the international SMS services sector.

Recognized Excellence in Global Connectivity

Mobily's excellence in innovation and connectivity was globally recognized in the past year.

Mobily receives 'Best Wholesale Company Middle East' at the Telecom Review Excellence Awards.

The company received the 'Best Subsea Innovation' award at the Global Connectivity Awards for its groundbreaking hybrid connectivity and cable landing solutions. Mobily was also honored by Telecom Review as the 'Best Wholesale Company in the Middle East' in 2024.

Additionally, Mobily showcased its leadership by sponsoring major industry events such as Capacity Middle East, Capacity Europe, Connected KSA, and the Submarine Networks World Conference, reinforcing its commitment to driving innovation, building industry collaborations, and expanding its global presence.

Enabling the Kingdom's Vision 2030

Mobily's infrastructure development is more than technological; it is national in its scope. Through its wholesale business, Mobily is enabling smart cities, digital industries, e-government services, and enterprise transformation in alignment with Saudi Arabia's Vision 2030.

By investing in sustainable, scalable infrastructure, Mobily contributes directly to the Kingdom's economic diversification and technological advancement goals.

Looking Ahead: Empowering the Future of Digital Transformation

As technologies like AI, IoT, and machine learning redefine industries, the need for secure, high-speed, and scalable connectivity grows ever more urgent. Mobily is meeting this challenge head-on by expanding its subsea footprint, forging global partnerships, and driving innovation across its network, products, and platforms.

Mobily Wholesale's strategy is clear: deliver next-generation digital infrastructure, innovative wholesale solutions, and tailored connectivity services, while maintaining a relentless focus on customer success.

Through its transformative infrastructure and forward-looking vision, Mobily Wholesale has firmly positioned itself as a key player in both national and international wholesale markets, actively shaping the future of the digital era rather than just adapting to it. TR

> Mobily was also honored by Telecom Review as the 'Best Wholesale Company in the Middle East' in 2024

Data Center Consumption and Generative AI

Between 2016 and the end of 2020, data center consumption trajectories seemed under control, stabilizing around 200 TWh (excluding Bitcoin). However, a turning point occurred.

The International Energy Agency (IEA) estimates that consumption has accelerated again, reaching 415 TeraWatt-hours (TWh) in 2024. By 2030, consumption, including cryptocurrencies, is projected to reach 945 TWh.

Although data centers developed quickly before the emergence of ChatGPT, generative AI (GenAI) has accelerated the trend. At the same time, cryptocurrencies regained strong momentum in 2024, accounting for approximately 20% of data center consumption.

Why is generative AI under scrutiny?

Energy-Intensive Generative AI

Firstly, large language models (LLMs) require extensive "training" on vast amounts of data. The creation of each model is extremely costly. GPT-3 reportedly required 1.3 GWh, while GPT-4 needed over 50 GWh. The training cost is closely tied to the model size (tenfold) and the amount of data used.

A true model building frenzy has taken over the tech sector. In the last quarter of 2024, nearly 80 trillion tokens were trained. Since early 2024, we have been advancing at a relatively constant rate, training 20 major models and 10,000 derived models per month (according to estimates from LifeArchitect.ai's Models Table).

Nevertheless, a model like GPT-4 is estimated to have already absorbed a significant portion of the useful written knowledge available. For example, the Library of Congress could represent 9 trillion tokens, whereas the largest models are trained on over 20 trillion tokens. So, why continue training new models?

On the one hand, these new models incorporate audio and images (known as multimodal AI) and produce more complex reasoning. They, thus, become increasingly precise as concrete use cases become more effective.

On the other hand, as it remains unclear exactly how these models function (they are "black boxes"), stakeholders adopt an empirical approach and continuously create new models, even to incorporate minor changes.

Today, numerous startups are attracting funding, fueling this training inflation in pursuit of "the best" model.

The second energy-consuming aspect of generative AI is the querying process, called inference. A textual query can require 3 Wh (already ten times more than a standard Google query). In the future, one minute of video production (from a multimodal query) could demand over 100 Wh. Therefore, part of data center computational power will be dedicated to model inference. Various analyses estimate that 70-80% of energy could be spent on inference.

Donald Trump's announcement of the Stargate project, aiming to construct USD 500 billion worth of computational capacity in the United States, asserts that generative AI leaders will be those possessing the largest computational capacities, enabling more models (and controlling access to knowledge) and more inference (benefiting from the most sophisticated uses). France, meanwhile, announced EUR 109 billion, ahead of the International AI Summit in Paris.

Limiting Growth Factors

NVIDIA supplies most chips used by generative AI. NVIDIA experienced substantial growth at the beginning of 2023 (shortly after ChatGPT's launch), now doubling annually. It is estimated that, in 2023, the company produced over 3.7 million chips for data centers, including hundreds of thousands of the powerful H100 model. This would represent about 20 TWh of consumption, including the manufacturing-related energy use, roughly double the previous year.

Microprocessor production was immediately identified as a bottleneck. It is also managed as a strategic asset, influenced by the China-US rivalry, and the versions sold in China are not the most advanced. NVIDIA's main clients in this segment are hyperscalers (Amazon, Facebook, Google), which aim to eventually develop their own chips, potentially reducing supply tensions.

Electricity production capacity risks becoming another limiting factor. According to a McKinsey study, data center demand is expected to account for 30-40% of new electrical capacities by 2030, within the context of growing electric energy demand, preferably decarbonized (electric heating, electric vehicles (EVs), electrolysis).

Additionally, specific problems may arise, such as the ease of building data centers (permits, availability of conditioning equipment) or the feasibility of grid connections. In Ireland, data centers represent 21% of electrical consumption, leading EirGrid, the Irish operator, to suspend new data center construction near Dublin.

Data center users are considering more autonomous solutions, even contemplating small nuclear reactors (SNR), which are miniature nuclear reactors still in the design phase.

Data centers also consume a significant amount of water for cooling, which can be problematic. A medium-sized data center consumes one million liters of water per day, roughly the amount needed to irrigate approximately 70 hectares of crops.

An Uncertain Future

Data center development now competes with other vital infrastructures such as transportation, housing, and agriculture. The primary limitation on data center growth could, thus, stem from inadequate electrical infrastructure. SNRs, if realized, would not be operational for another 15 years.

Moreover, faced with surging costs and uncertainty around generative AI revenue sources, stakeholders are seeking more energy-efficient models. Particularly, inference can be executed on less energy-intensive processors than training. Smaller models also mean lower inference costs. Some also challenge the race for large models, advocating for more distributed architectures.

This pursuit of sobriety is also prevalent among Chinese actors who lack access to NVIDIA's most powerful chips. An initial response may have been provided in early 2025 by the Chinese company, DeepSeek, which announced a conversational bot as effective as leading American models, with training costs of only USD 6 million, compared to hundreds of millions for American technology.

Thus, a combination of factors, including profitability, energy availability, and geostrategic considerations might curb the frantic race for computational power. Ultimately, business rationality may encourage more sustainable energy practices, leading to smarter artificial intelligence (AI). TR

By David Erlich, Consulting Director, Sofrecom

Faced with surging costs and uncertainty around generative AI revenue sources, stakeholders seek more energy-efficient models

The Digital Toll: Why the World is Taxing Tech Titans

In the shadowy realm where cloud servers hum and algorithms rule, tech giants have long sparred with national tax authorities; now, a reckoning is underway. From the boulevards of Paris to the corridors of Westminster, governments are erecting fiscal guardrails to ensure Silicon Valley, and its digital offspring worldwide, pays its dues.

This quest for equitable taxation has led to a mosaic of national policies, international negotiations, and, at times, trade tensions. But why is the world taxing tech titans?

Governments around the world are taxing tech titans to ensure fairer contributions from companies that generate massive profits using local users and data but often pay little or no tax in those countries. Traditional tax systems haven't kept up with the digital economy, allowing tech giants to shift and report their profits in low-tax havens. This shift also reflects growing concerns about the influence of big tech and the need for governments to reclaim economic and regulatory control.

Global Ripples and Retaliations

The global landscape of digital taxation is rapidly evolving, sparking tensions that reach far beyond fiscal borders. In April 2025, President Donald Trump's announcement of sweeping tariffs on global imports sent shockwaves through international trade, impacting both allies and adversaries. European leaders, including French President Emmanuel Macron, condemned these tariffs as "brutal and unfounded," signaling the possibility of countermeasures, such as suspending investments and implementing new digital taxes for U.S. tech giants.

This was particularly evident as President Trump's February 2025 memorandum targeted foreign digital services taxes (DSTs), with a particular focus on the EU, whilst also hinting at potential retaliation against other countries as part of his "reciprocal trade" policy. The memorandum called for expanded investigations and actions against discriminatory DSTs and regulatory barriers, which could spark further tensions with nations implementing digital taxes.
These developments highlighted the

deepening connection between digital taxation policies and broader trade dynamics.

As countries like the UK, India, and Australia introduced their digital taxes, the consequences rippled across multinational agreements, igniting a fierce debate about fairness, sovereignty, and the future of global commerce in an increasingly digital world. With the Trump administration rejecting multilateral approaches like the Organization for Economic Co-operation and Development's (OECD) Pillar One, which sought to redistribute profits and curb DSTs, the growing divide between unilateral and cooperative tax strategies could reshape the future of global trade and taxation.

France: The Rebel with a Tax Code

Amid these rising tensions, France has taken the lead in confronting big tech with a digital tax aimed squarely at the likes of Google, Amazon, and Facebook. In 2019, the French government introduced a 3% DST on revenues generated within French borders by tech companies with global revenues exceeding EUR 750 million and at least EUR 25 million in French earnings. This move served as a fiscal policy and a clear statement of intent. France sought to zero in on the tech giants profiting heavily within its borders while paying little to no taxes, exploiting loopholes in international tax regulations.

By focusing on revenues earned within France, the tax aimed to ensure that profits were taxed where value was created, not where companies strategically recorded their earnings.

Although France set a precedent that resonated across Europe and the world, the move was met with fierce resistance from the United States, which saw the tax as an affront to American companies. The French move also catalyzed other European Union (EU) members to explore similar measures, pushing the debate on digital taxation into the international spotlight.

The idea of a global framework to regulate digital taxes gained traction. However, it remained a complex and contentious issue, with multiple countries attempting to balance the need for innovation with the imperative of fair taxation.

Britain's Digital Balancing Act

Across the Channel, the UK charted a similar course by introducing its own 2% DST in 2020, targeting revenues from search engines, social media services, and online marketplaces profiting from substantial UK user bases. The UK government positioned the tax as a temporary measure to ensure tech giants contributed to the economy while awaiting an international solution. However, the move faced significant backlash, especially from the United States, which warned that unilateral digital taxes could trigger global trade disruptions and retaliatory actions.

In 2025, the UK is under renewed pressure following the Trump administration's reintroduction of tariffs, including potential reprisals against the UK's DST. This escalation has pushed the UK to seek new economic agreements to protect its industries from digital trade repercussions.

The situation underscores the challenge of balancing domestic tax measures with global trade diplomacy as the UK navigates the digital tax debate.

Europe's Quiet Enforcers

In recent years, Italy, Austria, and Spain have joined the growing movement across Europe to implement DSTs targeting global tech giants.

Austria introduced a 5% tax on digital advertising revenue in 2020, explicitly targeting tech giants benefiting from Austrian platforms. Italy implemented a 3% DST in 2020, targeting companies with over EUR 750 million in global revenue, including digital advertising and online sales. Similarly, Spain introduced a 3% DST in 2021, focusing on online advertising and intermediation services. This tax targeted companies like Google, Facebook, and Amazon, aiming to generate up to EUR 1 billion annually.

In 2025, Italy significantly expanded its DST by removing the EUR 5.5 million annual revenue threshold for digital services. This change means that any company with global yearly revenue exceeding EUR 750 million is now subject to the DST if it generates revenue from qualifying digital services in Italy. The tax rate remains at 3% for revenue from digital advertising, intermediation services, and data transmission.

A Global Chorus

Europe is not alone in its efforts to regulate big tech through digital services taxes. Countries like India, Canada, and Australia have also taken steps to reclaim lost tax revenue, creating a global chorus of nations attempting to level the playing field for digital taxation.

Africa

Across Africa, countries are increasingly implementing digital tax initiatives to capture a fair share of value from global tech giants operating within their borders.

South Africa, while not imposing a DST, has been tightening VAT collection on e-services since 2014 and expanded it in 2019 to cover more foreign suppliers. Kenya pioneered the charge in 2021 with a 1.5% DST targeting streaming platforms, ride-hailing apps, and e-commerce. However, under international pressure, Kenya replaced the DST in 2024 with a significant economic presence (SEP) tax, aligning with the OECD's Pillar One framework by taxing 30% of deemed profits from digital services. Nigeria implemented a 6% tax on non-resident digital service providers in 2022, requiring companies with significant economic presence to register and remit VAT. Uganda and Tanzania have experimented with taxing social media use and digital platforms, though such policies have sparked public backlash.

Asia Pacific

In 2025, the Asia Pacific continues to assert its influence in the evolving global digital tax landscape with several key policy shifts.

India, a frontrunner in taxing the digital economy, made a notable move by abolishing its 6% equalization levy on digital advertising services provided by non-resident companies, effective April 1. This followed an earlier decision in August 2024 to repeal the 2% levy

on e-commerce supplies and services by foreign firms. Both measures were part of India's broader strategy to align with international tax norms and ease mounting trade tensions, particularly with the United States, which had raised concerns over the perceived discriminatory nature of the levies.

Meanwhile, the Philippines took a decisive step by implementing a 12% value-added tax on digital services offered by foreign tech companies, including streaming platforms and online search engines. The law was passed in late 2024 and enacted in 2025, with the government projecting significant revenue gains over the next five years. The goal was to create a level playing field between domestic providers and global digital platforms, ensuring fair taxation of digital transactions.

In December 2024, Australia unveiled a digital services tax targeting tech giants such as Meta, Google, and TikTok, set to begin in 2025. The levy applies to companies earning over AUD 250 million locally.

Malaysia also entered the digital tax spotlight in 2025, though under different pressures. After the United States imposed a 24% reciprocal tariff on Malaysian goods, the Federation of Malaysian Manufacturers (FMM) urged the government to delay introducing additional tax burdens—particularly the expansion of the sales and services tax (SST) and the rollout of DTS.

China has prioritized supporting its domestic digital economy through tax incentives and modernization efforts, rather than imposing digital services taxes (DSTs) on foreign tech companies, likely to avoid escalating tensions with the United States and to prevent broader trade conflicts. The government has implemented significant tax cuts and fee reductions to encourage technological innovation and high-end manufacturing, totaling approximately CNY 2.63 trillion yuan (USD 361 billion) in 2024 alone. Additionally, China has introduced policies such as a 10% corporate income tax deduction for investments in digital and intelligent transformation of equipment between 2024 and 2027.

Canada

Canada's DST, which came into force in mid-2024, is already shaping its domestic tax policies, and the first payments are expected by June 30, 2025. This tax targets large foreign digital companies generating significant revenues in Canada, with global revenues exceeding EUR 750 million and Canadian revenues surpassing CAD 20 million. The implementation of the DST in Canada, coupled with its retroactive application to 2022 revenues, has raised tensions with the United States, which views the tax as discriminatory against U.S. tech giants.

In response, the U.S. Trade Representative initiated trade dispute consultations in August 2024, arguing that Canada's DST violates international trade agreements. This ongoing dispute culminated in February 2025 when President Donald Trump announced plans to impose retaliatory tariffs on Canada and France, which have implemented similar taxes targeting foreign digital firms. The decision to move forward with tariffs highlights the growing friction between the U.S. and other nations over digital taxation.

Can Global Coordination on Digital Taxation Be Achieved?

The digital tax landscape is entering a crucial phase in 2025. With many countries moving toward unilateral digital taxes, the global tax system is in flux.

Tensions are rising, especially as the OECD's Pillar One and Pillar Two frameworks face delays and complications.

Pillar One seeks to shift taxing rights to countries where digital companies create value through their users, even without a physical presence. This could allow countries like India and France to claim a share of tax revenue from companies like Google or Meta. Pillar Two, meanwhile, introduces a 15% global minimum tax on multinational corporations, aiming to end the "race to the bottom" on tax rates.

Although over 140 countries initially agreed to these principles, the timeline for implementation is now uncertain. National priorities and legal hurdles have slowed progress, with countries like France and India moving forward with their digital taxes, risking trade conflicts.

The return of Donald Trump to the U.S. presidency in 2025 has further complicated matters. The U.S., home to most major tech firms, has threatened retaliatory tariffs against countries imposing DSTs. Meanwhile, in a letter from February, U.S. congressional Republicans criticized Pillar One, which reallocates taxing rights over multinational enterprises, arguing it disproportionately affects U.S. companies, and Pillar Two's global minimum tax, which they determined undermines U.S. tax incentives.

Despite these challenges, the OECD's plan remains the most comprehensive attempt at global coordination on digital taxation.

How countries navigate these issues in 2025 will shape the future of international tax reform.

The Verdict

As the year unfolds, the debate over digital taxation has reached a fever pitch, with countries fiercely divided. While some push for reforms to curb corporate dominance and ensure a fairer tax system, others fear the potential economic fallout.

This shift has been especially pronounced in Europe and parts of Asia, where governments are aiming to level the playing field between local businesses and dominant international technology companies. However, the U.S. government has viewed many DSTs as discriminatory against American companies and, under both the Trump and Biden administrations, has threatened retaliatory tariffs, which are now coming to fruition.

As more countries push forward with their own rules—whether to assert digital sovereignty, raise internal revenue, or challenge the dominance of big tech—a fragmented global tax environment remains.

One thing, however, is clear: the era of low-tax digital empires is nearing its end. TR

TDRA Launches DGOV Community to Enhance Knowledge Exchange

The Telecommunications and Digital Government Regulatory Authority (TDRA) recently hosted a session that brought together digital transformation experts from federal government entities. The session marked the launch of the Digital Government Community (DGOV Community) and explored how training can be leveraged to enhance skills and promote knowledge exchange.

The DGOV Community brings together digital transformation experts from all federal government entities to develop skills and exchange experiences and knowledge in collaboration with technology companies.

The United Arab Emirates Digital Government (DGOV) stands as the leader in digital transformation in the Arab world, ranking number one and holding the 13th global rank in the UN E-Government Development Index (EGDI).

The UAE aims to achieve global excellence and become the leading digital government in the world by its centennial year (2071).

In a move that reflects the UAE's leadership in the adoption of advanced technologies, especially in the telecommunications sector, the TDRA recently updated the fourth version of the National Frequency Plan, including the allocation of the 600 MHz and 6 GHz frequency bands for International Mobile Telecommunications (IMT) systems. This proactive move makes the UAE one of the first countries in the world to take the initiative to allocate such bands to operators. This plan comes in the context of the practical implementation of the outcomes of the 2023 World Radiocommunication Conference (WRC-23), held in Dubai, UAE, which garnered the participation of all countries across the world.

5G Expansion, Economic Gains, and Omanization: Key Drivers of Oman's Telecom Success

Oman's Telecommunications Regulatory Authority (TRA) has announced significant milestones in the sultanate's telecom sector for 2024, with notable gains in subscriptions, infrastructure, and revenues.

Mobile subscriptions grew by 7% to reach 7.5 million, while Internet of Things (IoT) subscriptions surged by 72% to 1.1 million. Fixed broadband connections also displayed a modest 2% increase. At the same time, the number of 5G stations expanded by 12%, supporting the country's push toward nationwide next-generation connectivity.

Notably, the telecom sector in Oman generated approximately OMR 920 million in revenue last year, marking a 4% rise compared to 2023 and reflecting Oman's broader economic diversification and digital transformation efforts.

Meanwhile, the number of licensed telecom providers in Oman also climbed by 9% to 24. Companies authorized to offer telecom services also jumped by 63%, totaling 399, with small and medium-sized enterprises (SMEs) accounting for 72% of them.

TRA Oman CEO, H.E. Omar Hamdan Al-Ismaili, confirmed that 6,500 telecom towers across the sultanate were upgraded from 3G to 4G and 5G in 2024. In addition, 545 new 5G stations are set to be built this year, bringing the total number of 5G sites to 5,856 (an annual increase of 13%).

According to the International Monetary Fund (IMF), Oman has achieved 100% 4G coverage nationwide and now surpasses the average Organization for Economic Cooperation and Development (OECD) country in 5G reach, covering 88% of the population.

High-speed fixed broadband in Oman also now extends to 90% of residential units, while 97% of public schools are connected to the internet, achieving full internet coverage across all public schools, Al-Ismaili noted.

Remarkably, the telecom sector's 'Omanization' rate remained strong, reaching 71% among telecom operators and 40% among telecom implementation companies, with specialist roles achieving 91% among telecom contractors and 66% among licensed telecom providers.

Oman is also investing heavily in ICT talent to achieve digital innovation and growth. In support of this, the Ministry of Transport, Communications and Information Technology (MTCIT) officially launched the National Program for Artificial Intelligence (AI) and Advanced Digital Technologies, set to run from 2024 to 2026.

Further underlining its digital progress, Oman climbed 26 spots to rank 22nd globally in the Telecommunications Infrastructure Index and is now among the top 28 countries worldwide for average mobile data download speeds.

UAE Among Top Global Emerging AI Contenders

The UAE has officially ranked among the top emerging global economies in artificial intelligence (AI) readiness, according to a report titled 'GCC AI Pulse: Mapping the Region's Readiness for an AI-Driven Future' by Boston Consulting Group (BCG).

According to BCG's inaugural AI Maturity Matrix, the UAE has earned the designation of AI Contender alongside 31 economies worldwide, including Saudi Arabia, the United States, China, Singapore, the United Kingdom, and Canada, among others. The AI Maturity Matrix identified four economic archetypes based on their level of AI readiness: AI Emergents, Practitioners, Contenders, and Pioneers.

Other Gulf Cooperation Council (GCC) countries, including Qatar, Kuwait, Oman, and Bahrain, were placed in the AI Practitioners category, indicating a substantial opportunity to advance AI readiness and leadership in the region, with the UAE making similar progress.

From Regional Leader to Global Contender

As a first-mover in terms of AI governance and the leading nation globally in sovereign investment, the UAE mirrors many benchmarks set by established AI Pioneers, reflecting its successful integration of AI technologies on a national scale. The country's vision, reflected in robust policy initiatives such as the National AI Strategy 2031 and the appointment of the world's first AI Minister in 2017, demonstrates a strong direction towards AI-centric economic and social value.

The human capital aspect, with nearly 7,000 AI specialists in the country, highlights a robust base, yet expanding this talent pool is essential to sustain innovation, drive economic transformation, and keep pace with AI advancements. The UAE is also among the regional leaders in AI-related research, with approximately 700 AI-related publications. However, there remains a palpable need to bridge the gap toward achieving globally recognized innovations.

Oman's MTCIT Plots Structured Government Digital Transformation

His Excellency Eng. Saeed bin Hamoud Al-Maawali, Minister of Oman's Ministry of Transport, Communications, and Information Technology (MTCIT), issued Ministerial Decision No. (108 /2025), enacting the Regulatory Framework for Government Digital Transformation.

The framework aims to regulate governance and establish the organizational structure for the Government Digital Transformation Programme, Tahawul, while also defining the controls for implementation across the government sector. It sets out clear roles and responsibilities for all stakeholders involved in executing digital projects and initiatives.

The regulation provides a structured framework to strengthen digital governance and coordinate digital transformation efforts across government entities by clearly defining the roles, authorities, and responsibilities of all concerned parties. It also promotes closer integration between MTCIT and other government entities, enabling them to implement digital projects within a unified governance model. The provisions apply to all administrative units of the state and other public legal entities, excluding military and security agencies, except for the Royal Oman Police.

As published in the Official Gazette, the regulation outlines the Ministry's responsibilities in overseeing the Government Digital Transformation Program. These include setting operational pathways for the program, identifying priority initiatives, projects, and services, and preparing and issuing relevant policies, frameworks, controls, and guiding manuals. The Ministry is also tasked with monitoring the compliance of concerned entities, providing support across all areas of digital transformation, and following up on implementation plans by developing the necessary programs to ensure progress.

The regulation also sets out the obligations of government entities in implementing digital transformation projects and initiatives. Key requirements include establishing a supervisory committee responsible for meeting digital transformation objectives, monitoring the implementation of the IT governance policy issued by the Ministry and preparing and updating relevant plans. Entities must also implement approved digital initiatives and fully digitize essential services and make them available through approved digital channels. Additionally, the regulation calls for enhancing integration, facilitating access to shared digital resources and systems, encouraging community participation in the development of digital services and policymaking, and ensuring that all beneficiaries including people with disabilities and the elderly can access digital information, services, and applications.

This Is Why Industry Leaders Are Investing Heavily in Smart Equipment

Have you heard of the term futureproofing? This has now become a critical strategy for network operators aiming to maintain competitiveness and meet escalating demands.

Futureproofing involves implementing scalable, flexible, and intelligent equipment to accommodate emerging technologies such as 5G, the Internet of Things (IoT), and cloud services. This approach ensures that networks can seamlessly adapt to technological advancements, diverse traffic types, and evolving security challenges.

Why Smart Equipment Is the Key to Futureproofing

Agility

The swift progression from 5G to 6G, coupled with the integration of artificial intelligence (AI), requires networks that can rapidly adapt. Smart equipment facilitates this agility, allowing operators to incorporate new technologies without overhauling existing infrastructure.

Nowadays, a cloud-native system eliminates the need for on-premises computing infrastructure, saving space, time, and costs. Modern network architectures have already been designed and standardized in accordance with a cloud-native approach.

For example, Cisco's updated Mobility Services Platform and Programmable Core presents communication service providers (CSPs) and enterprises with new ways to scale differentiated services. "By delivering these solutions 'as-a-Service,' we are enabling greater agility, faster innovation, and expanded monetization opportunities—whether through IoT, fixed wireless access (FWA), or 5G-Advanced (5G-A) services," said Zayan Sadek, Managing Director for Service Providers MEA at Cisco.

Flexibility

Modern networks must handle a variety of traffic types, including IoT communications, augmented reality (AR), virtual reality (VR), and enterprise data. Flexible equipment ensures efficient management of these diverse demands, optimizing performance across all services to create adaptive experiences for users.

Nokia's anyRAN approach allows operators to choose their preferred cloud platforms, whether private, public, or hybrid. This flexibility enables rapid adaptation to evolving demands, including low-latency services, network slicing, and enhanced mobile connectivity.

Longevity

Investing in upgradeable or adaptable equipment extends the lifespan of network infrastructure. This forward-thinking approach reduces the need for frequent replacements, offering long-term cost savings and sustainability.

Zain KSA's self-operating Passive IoT promises an extended lifespan, supporting more sustainable and efficient applications within future 5G networks. Unlike traditional IoT devices, Passive IoT Tags require no active power sources, simplifying installation, minimizing maintenance and replacements, and lowering overall costs.

When it comes to data center operations, by integrating power management and energy efficiency measures, these measures contribute to enhanced reliability, longer equipment lifespan, and improved overall performance.

Critical Features of Smarter Telecom Equipment

Intelligence

Integrating AI and machine learning (ML) facilitates network optimization and automation. For instance, AI-driven operations and maintenance can proactively identify and resolve issues, enhancing reliability and efficiency.

By 2025, Apptium aims to embed advanced intelligence that enables CSPs to deliver context-aware recommendations, optimize interactions, and gain real-time, AI-driven insights for smarter, more strategic operations.

On the other hand, committed to developing intelligent, automated, and future-proof telecom solutions, Comarch supports operators by providing AI-powered operational support systems (OSS) solutions that enable real-time network automation, zero-touch provisioning, and intelligent network slicing.

Interoperability

Interoperable equipment enables operators to work with diverse partners and adopt best-in-class solutions, driving innovation and adaptability. Back in 2018, Deutsche Telekom, Huawei, and Intel achieved a milestone by completing the world's first 5G interoperability and development testing (IODT) using a commercial base station, based on the 3GPP Release 15 standard.

Security

Cybersecurity is the top challenge for organizations that are trying to run and maintain industrial infrastructure. Hence, built-in security measures protect against evolving threats, ensuring the integrity and confidentiality of data. Following the latest AI developments in the security space, Aryaka has launched a Unified SASE-as-a-Service (USaaS) solution, encompassing networking, security, and observability for its global customers.

> Investing in upgradeable or adaptable equipment extends the lifespan of network infrastructure

Notably, last July's outage exposed the fragile link between system operations and security, highlighting the need for stronger safeguards and rigorous testing in software updates.

Sustainability
Low-energy equipment aligns with environmental targets and reduces operational costs. Sustainable practices not only benefit the environment but also enhance the operator's reputation and compliance with regulations. To achieve this, operators can opt for greener telecom networks that incorporate fiber optics into their operations. This is an innovative option to better ensure environmentally responsible usage of communication networks and related sources.

5G-Advanced's more advanced features, including lower latency and capacity, are also poised to accelerate the step towards renewable energy, and further reduce carbon dioxide (CO_2) emissions.

Case Studies: Telecom Leaders Already Futureproofing

The success of industry leaders underscores the tangible benefits of this strategic approach, serving as a blueprint for others in the sector. Here are a few examples:

Vodafone Oman's 5G NEXT LEVEL Network: Vodafone Oman has embarked on building a greenfield 5G network, known as the 5G NEXT LEVEL network, from the ground up. This approach seamlessly integrates AI, cloud computing, and IoT into their network architecture, positioning Oman at the forefront of the digital revolution. The network's energy-efficient design, utilizing minimal infrastructure, sets a new standard for eco-conscious telecom networks.

stc Group's AI-Powered Network Optimization: During the Hajj season, stc Group implemented Nokia's customized AI-powered MantaRay Self-Organizing Network (SON) system. Despite a 40% increase in network traffic, the system processed over 10,000 actions in a live network, improving utilization rates by approximately 30% on loaded cells and enhancing user throughput by 10%. This deployment reduced manual work and paved the way for future AI automation in telecommunications infrastructure.

Ooredoo Oman's Technological Innovations: Ooredoo Oman has been focusing on harnessing technology for national growth by implementing advanced network solutions. Their initiatives include deploying AI-powered systems for network optimization and collaborating with industry peers to drive digital transformation. These efforts have resulted in improved network quality and paved the way for future AI automation in telecommunications infrastructure.

NEC's Network Transformation Services: NEC manages multi-vendor and multi-domain technologies, ensuring comprehensive lifecycle management, whilst also guaranteeing interoperability and security among diverse systems.

The Path Forward: Making Smarter Equipment Choices

To effectively future-proof networks, telecom leaders should consider the following strategies:

- **Vendor Selection:** Choose vendors whose technology roadmaps align with the operator's long-term objectives. Assessing a vendor's commitment to innovation and support for emerging technologies ensures compatibility with future advancements.
- **Ongoing Training and Research and Development (R&D) Investment**: Invest in continuous training for staff to keep pace with technological changes. Allocating resources to research and development fosters innovation and prepares the organization for future challenges.
- **Proactive Security Measures:** Implement equipment with built-in security features and regularly update protocols to address new threats. A proactive approach to cybersecurity safeguards the network's integrity and user trust.
- **Sustainability Initiatives:** Prioritize equipment that meets environmental standards and contributes to energy efficiency. Sustainable practices not only reduce operational costs but also enhance corporate social responsibility (CSR) profiles.

Investing in smarter equipment today is essential for telecom operators aiming to maintain a competitive edge in the future.

By focusing on agility, flexibility, longevity, intelligence, interoperability, security, and sustainability, operators can build networks capable of adapting to technological advancements and evolving market demands. TR

> Integrating AI and machine learning (ML) facilitates network optimization and automation

The Rise of VR in Shaping Decision-Making

"Virtual Reality's potential applications are limited only by our imagination and the technology can even stimulate that when you let it take you into imaginary worlds," narrated a reporter in a BBC archived video on virtual reality (VR) from the 1990s.

Since that time, the cumbersome VR headsets used to explore the virtual world have undergone a massive transformation, with the introduction of high-quality devices that leverage powerful graphics and motion-tracking technology powered by artificial intelligence (AI). AI motion capture, often referred to as AI mocap, utilizes advanced algorithms and machine learning (ML) to track and record human movements, unlike traditional systems that rely on multiple cameras and physical markers.

VR creates environments, experiences, and interactions that look and feel real. VR headsets allow users to be transported into a three-dimensional (3D), interactive world that can be explored and manipulated. This digital environment is designed to engage multiple senses, including sight, sound, touch, and movement.

Immersive Decision-Making

VR enhances decision-making by immersing users in realistic, interactive simulations where they can visualize data, test scenarios, and collaborate in real time. This approach helps leaders and teams understand complex problems, assess risks, and predict outcomes before taking action.

For example, in the telecom sector, VR can be used to remotely troubleshoot networks, train staff, and test the customer's journey, helping decision-makers adapt quicker and more accurately. By turning abstract information into tangible experiences, VR supports clearer, more confident decision-making.

VR's features make it an ideal instructional tool. By creating immersive, interactive environments, VR can trick the brain into believing it's experiencing something real. The experience taps into the same neural pathways that depict a walk through a natural, picturesque landscape, although, in a virtual setting.

According to PwC, workers trained using VR typically learn faster and retain more knowledge than through other forms of learning, such as watching videos or reading manuals, enhancing their future decision-making process.

Furthermore, VR enables workers to repeat and practice parts of their training until they've mastered the material—something that's often impractical or costly in the real world. Additionally, VR-based training can be conducted in environments that don't interfere with ongoing operations, such as a factory floor or oil rig, where trainees might otherwise cause risks or delays.

Tiered VR Simulations for Decision-Making

According to Statista, the VR industry is rapidly growing, with the consumer market projected to rise from under USD 16 billion in 2024 to over USD 18 billion by the end of 2025. The continued expansion of the VR gaming industry is expected to fuel growth across both consumer and enterprise segments, as businesses adopt VR to enhance decision-making processes in the customer experience (CX), remote collaboration, and employee training verticals.

There are three primary categories of VR simulations in use today: non-immersive, semi-immersive, and fully immersive. Non-immersive simulations, such as desktop-based virtual environments, help teams visualize data and model outcomes with minimal setup. Semi-immersive systems, often using large screens or partial headsets, allow managers to engage more deeply with simulations for tasks such as layout planning or operational testing. Fully immersive VR, using headsets and motion tracking, enables leaders to step into complex business scenarios, such as crisis simulations, product design reviews, or customer journey mapping, offering an intuitive, risk-free environment to test decisions before implementation.

> As mass markets for VR/AR emerge, mobile operators must upgrade their infrastructure to support high-quality immersive experiences

In addition, design thinking introduces creative problem-solving strategies that promote a human-centered culture. In the digital age, integrating digital technologies like VR/augmented reality (AR) and generative AI (GenAI) enables real-time feedback and seamless collaboration, showcasing immense innovation and decision-making potential. The combination of design thinking and emerging technologies can deliver transformative outcomes for organizations that embrace change, empower employees, foster creativity and innovation, and prioritize customer needs. Even in the AI era, design thinking remains key to unlocking extraordinary, tech-enabled solutions.

Preparation Underway

As mass markets for VR/AR applications emerge, mobile network operators (MNOs) must upgrade their infrastructure to support high-quality, truly mobile, immersive experiences. Beyond networks, terminal design must also adapt, focusing on power consumption, battery life, and thermal efficiency.

Equipment manufacturers such as Huawei and Nokia are working closely with operators in the MENA region to deliver innovative VR solutions that support digital transformation across industries.

In June 2024, Nokia made a phone call using "immersive audio and video," which enhances call quality with three-dimensional sound, making conversations more lifelike. During the call, former CEO, Pekka Lundmark, said, "We have demonstrated the future of voice calls."

"This groundbreaking audio technology takes you to the caller's environment, creating a spatial and massively improved listening experience for voice and video calls, offering significant benefits for enterprise and industrial applications."

The Immersive Voice and Audio Services (IVAS) codec enables live spatial audio across connected devices (e.g., smartphones, tablets, or PCs), providing real-time interaction with three-dimensional sound. Developed by a 13-company consortium under the IVAS Codec Public Collaboration, the 3GPP IVAS codec standard benefits from Nokia's leadership, including the creation of a smartphone-specific format. Standardizing this technology globally is crucial for ensuring interoperability across operators, chipset providers, and handset manufacturers, making spatial communication accessible to all.

Moreover, the United Nations International Computing Centre (UNICC), the International Telecommunication Union (ITU), and Digital Dubai launched the 'Global Initiative on Virtual Worlds—Discovering the CitiVerse' to encourage innovation in virtual world solutions that supports sustainable urban development. The announcement was made during the inaugural UN Virtual Worlds Day, organized by the ITU, UNICC, and 16 other UN partners.

Virtual worlds—including the metaverse and CitiVerse—are digital environments arising from the fusion of physical and virtual realities, integrating advanced technologies like VR/AR, spatial computing, the Internet of Things (IoT), digital twins, blockchain, AI, and cloud computing. These technologies aid decision-makers in visualizing operations and scenarios, allowing them to collaborate across geographies with depth and precision.

Futuristic Decision-Making

The future will be shaped by artificial intelligence and smart assistants across both work and personal life, alongside the rising adoption of AR and VR. Telecommunications serves as the backbone of this ecosystem. Fixed and wireless networks have been key drivers of this evolution, and with the growing role of satellite internet, telecom's positive influence on the digital world will continue. The sector's role is vital to ensuring a functional and connected future. Strategic innovation and collaboration will underpin the technological progress that redefines how we live.

Mobile operators are closely tracking VR/AR trends in consumer electronics and applications. Many global operators now offer headsets bundled with smartphones, as immersive gaming and other applications gain traction. The UAE's du, for instance, launched the du Innovation Center to help commercialize the latest technologies and harness next-gen innovations within the UAE and beyond.

Looking ahead, mobile operators must evaluate the impact of VR and AR on their networks and explore the most promising use cases and business models to enhance their decision-making capabilities. TR

The future will be shaped by AI and smart assistants across both work and personal life, alongside the rising adoption of AR and VR

Safeguarding Submarine Cables in the AI Era

Beneath the waves lies an intricate network of submarine cables powering global communications. Stretching across continents, these underwater marvels carry 99% of transoceanic data traffic, facilitating emails, video streaming, cloud computing, and even financial transactions.

Valued at USD 29.150 million in 2024, the global submarine cable market is projected to reach USD 56.96 billion by 2035, growing at a 6.3% annual rate, according to Future Market Insights. This growth is being driven by the growing demand for higher bandwidth, cloud computing, and data centers, alongside significant investments from governments, telecom operators, and hyperscalers, including Google, Microsoft, and Amazon.

Although artificial intelligence (AI) is revolutionizing industries, it is also transforming the submarine cable ecosystem. By integrating AI, these underwater infrastructures are poised to fortify connectivity across the world.

AI and the Hidden Backbone of Global Communications

Often referred to as the world's information superhighways, submarine cables form the foundation of global connectivity. Between 2025 and 2035, Future Market Insights predicts the submarine cable market's expansion to be driven by AI-facilitated network optimization, quantum communications, and environmentally friendly cable production.

AI will enable predictive maintenance and prevent potential outages. These advancements are pivotal as modern devices evolve to generate real-time data for enhanced analytics and performance.

AI's ability to learn from complex data patterns is changing how submarine cables are safeguarded. By analyzing telemetry data such as temperature, pressure, and signal quality, AI can identify faults and address them before failures occur. Machine learning (ML) models can also detect maritime threats such as fishing vessels or anchors nearing cable routes, while AI simulations help telcos plan alternate routes to ensure continuous service.

Moreover, AI-powered systems significantly enhance security by detecting network traffic anomalies

and thwarting potential cyber threats, safeguarding critical information from theft.

AI's impact transcends mere operational efficiency in subsea cable infrastructures. According to Geoff Bennett, Director of Solutions and Technology at Infinera, AI is transforming submarine line-terminating equipment (SLTE), automating network planning, optimizing capacity, and enabling proactive threat monitoring.

Modern Submarine Cable Infrastructure Challenges

The submarine cable industry has been powering global communications for decades. Despite technological advancements, submarine cables remain vulnerable to a range of physical and digital threats that require stringent solutions.

Traditionally, geological activities, including earthquakes, harsh weather conditions, and human activities such as anchor-dragging and fishing gear entanglement have disrupted cable operations. Deliberate sabotage has also been a concern. For instance, Chungwha Telecom's Trans-Pacific Express cable was involved in an incident near Taiwan in 2025. The suspected damage involved a Chinese vessel which highlighted geopolitical tensions.

Today, digital threats further complicate submarine cable challenges, with cyber hackers infiltrating network management systems to disrupt data flow or exploit sensitive information.

With over 95% of international data routed through fiber optic cables, according to the National Oceanic and Atmospheric Administration (NOAA), espionage threats remain a critical concern, as national security secrets pass through underwater networks.

Safeguarding Submarine Cables with AI

In 2020, NATO emphasized the need to safeguard transatlantic cables from potential cyberattacks and sabotage. AI serves as a promising solution to addressing digital vulnerabilities, some of which include enhanced encryption capabilities, automated threat detection systems, and predictive maintenance to avert disruptions.

Traditional inspection methods have relied on survey vessels equipped with sonar systems or remotely operated vehicles (ROVs), both of which have deep-sea limitations. These survey vessels have high operational costs and are inefficient due to restricted operational mobility and coverage. To address these challenges, researchers from Shenyang Institute of Automation in China suggested utilizing autonomous underwater vehicles (AUVs) equipped with side-scan sonar (SSS) to track underwater cables in 2024. The study proposed a non-myopic receding-horizon optimization (RHO) strategy to enhance cable imaging quality and minimize imaging jitters.

As the adoption of 5G-Advanced (5G-A) and the arrival of 6G accelerates, the reliance on submarine cables to sustain global connectivity will increase. By integrating AI technologies, submarine cables are becoming better equipped to meet the growing demands of the digital landscape.

Telecom Egypt uses Ciena's AI-powered Blue Planet platform to monitor and optimize its vast network of cables across the Mediterranean and Red Sea. This integration ensures real-time visualization and proactive threat detection, significantly strengthening operational resilience and safeguarding connectivity.

Similarly, the PSI Project associated with the Medusa submarine cable system aims to develop a smart monitoring system to prevent damages to submarine cables. This system will issue warnings to detect and flag activities that could potentially harm the cables, helping to prevent damage.

Furthermore, telecommunications and data infrastructure company, Prima, partnered with Alcatel Submarine Networks (ASN) in 2024 to develop the world's first Science Monitoring and Reliable Telecommunications (SMART) subsea cable system. Expected to be operational by 2026, this cutting-edge initiative integrates Advanced Climate Change Nodes (CC Nodes) into the subsea cable system, creating a real-time monitoring and warning system. This project is led by a joint task force consisting of the International Telecommunications Union (ITU), World Meteorological Organizations (WMO), and the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Intergovernmental Oceanographic Commission (IOC).

Additionally, the ITU has formed the International Advisory Body for Submarine Cable Resilience, aiming to strengthen cable resiliency, while NATO has introduced undersea cable protection to combat potential sabotage with a fleet of unmanned surface vehicles (USVs), which patrol high-risk naval zones.

These innovations are critical as geopolitical tensions rise, particularly with China's recent development of a cutting-edge, deep-sea, cable-cutting device that can sever underwater communication and power lines. Developed by the China Ship Scientific Research Center (CSSRC) and the State Key Laboratory of Deep-sea Manned Vehicles, this advanced technology poses a significant risk to global data transmissions.

Futuristic, Fortified Connectivity

In the AI era, submarine cables are no longer just information channels; they are evolving into intelligent systems that redefine data transmission across continents. While challenges persist, global cooperation and a robust governance framework are needed to safeguard these critical infrastructures.

Integrating AI into the submarine cable industry is crucial as the demand for data continues to rise with the proliferation of modern technologies.

AI's influence on the submarine cable sector will usher the world into a new era of connectivity, powered by real-time insights, predictive capabilities, and enhanced security, paving the way to a new level of communication. TR

Es'hailSat سهيل سات
Qatar Satellite Company الشركة القطرية للأقمار الصناعية

Space to deliver your vision

SECURE AND RELIABLE CONNECTIVITY ACROSS MENA

Es'hailSat delivers satellite services for broadcast, broadband, mobility, corporate and government customers across the Middle East and North Africa, and beyond.

OUR PRODUCTS AND SERVICES INCLUDE

VIDEO SERVICES
- Direct-to-Home
- Broadcast Distribution
- Broadcast Contribution & Occasional Use
- Digital Satellite News Gathering
- Playout & Media Services

TELECOM SERVICES
- VSAT Networks
- Cellular Backhaul
- Maritime Services
- Oil & Gas / Energy Services
- IP Trunking
- Mobility Services

TELEPORT SERVICES
- Tier-4 Certified
- Antenna Hosting
- Private Data Center Suite
- Co-Location Services
- Partial / Full Rack
- Studio Spaces

SATEXPO | CABSAT

Visit Us at Stand No. S3 - B10,
Sheikh Saeed Hall - 3,
Dubai World Trade Center
May 13 - 15, 2025

www.eshailsat.qa

Why Qatar Might Be the Next AI Superpower

Did you know that Qatar's artificial intelligence (AI) sector is projected to reach a market value of over QAR 2 billion by 2025? By 2030, artificial intelligence is expected to boost the national economy by 2.3% and generate approximately USD 5 billion in revenue, underscoring Qatar's digital transformation and ambition to become a global AI innovator.

This rapid growth is being fueled by forward-thinking government strategies, substantial investments, and a strong commitment to embedding AI across critical sectors.

"AI is not just a tool; it is an invitation to rethink how we solve problems, grow economies, and improve lives," remarked H.E. Reem Mohammed Al Mansoori, Assistant Undersecretary for Digital Industry Affairs, Ministry of Communications and Information Technology (MCIT), during the Qatar Science & Technology Park (QSTP) AI Week 2024.

With this in mind, central to Qatar's AI progression is its National Artificial Intelligence Strategy, which outlines a comprehensive framework focusing on six core pillars: education, data access, employment, business, research, and ethics.

This strategy aims to cultivate a robust AI ecosystem by emphasizing education and talent development, ensuring data accessibility while maintaining governance, transforming employment landscapes, and fostering business opportunities. Ethical considerations and public policy are also being prioritized to guide the responsible development of AI applications.

Major AI Projects and Collaborations

Qatar is actively positioning itself as a regional leader in artificial intelligence through high-impact projects and strategic partnerships.

From government-driven AI deployments to private sector innovations, the country is fostering a dynamic AI ecosystem that supports its digital transformation goals and economic diversification efforts.

In February 2025, Qatar's Ministry of Communications and Information Technology (MCIT) entered a five-year strategic partnership with US-based Scale AI to transform public services through artificial intelligence. The collaboration aims to develop more than 50 AI-powered applications by 2029, leveraging predictive analytics, automation, and data intelligence to optimize operations across government sectors.

To support this initiative, the partnership also includes dedicated AI training programs designed to equip government employees, students, and young professionals with the skills needed to thrive in an increasingly digital and AI-driven future.

Another significant initiative is 'Fanar – The Arab Artificial Intelligence Project', launched during the World Summit AI Qatar 2024. Inaugurated by Prime Minister and Minister of Foreign Affairs, His Excellency Sheikh Mohammed bin Abdulrahman Al Thani, Fanar aims to elevate the Arabic language and culture in the AI era. Developed in collaboration with the MCIT and Hamad Bin Khalifa University, Fanar is designed to understand Arabic in all its dimensions, encompassing diverse dialects and cultural expressions. The project boasts a database of over 300 billion words and more than a trillion Arabic phonetic segments, facilitating advanced text generation and analysis capabilities.

Qatar's commitment to AI is further exemplified by substantial investments in digital infrastructure. In October 2024, the Qatar Investment Authority (QIA) announced plans to merge the telecommunications ventures of the Qatar National Broadband Network (QNBN) and Gulf Bridge International (GBI). This merger aims to create a leading digital and AI infrastructure entity by combining QNBN's domestic fiber network with GBI's international submarine and terrestrial cables. The initiative is part of Qatar's broader strategy to position itself as a prominent digital hub both regionally and globally.

"From government-driven AI deployments to private sector innovations, the country is fostering a dynamic AI ecosystem that supports its digital transformation goals and economic diversification efforts"

Additionally, Ooredoo Qatar has embarked on a significant expansion of its data center network by securing a QAR 2 billion (approximately USD 550 million) loan. Ooredoo Qatar will enhance its regional data centers to meet the growing demand for AI applications by building 120 megawatts of data center capacity over the next five years and collaborating with global tech giants. This move reflects the Gulf region's broader ambition to become a central player in the global AI and data center market.

Ooredoo Qatar has also been at the forefront of integrating AI into its operations to enhance customer experiences (CX) and transform network capabilities. Ooredoo has already integrated powerful AI tools to streamline workflows; reduce manual tasks; drive real-time, data-informed decisions; and deliver faster, more personalized customer support while maintaining high service quality. "These AI advancements support Ooredoo's broader goals for digital engagement, positioning our company as a leader in customer experience innovation across Qatar and the wider region," commented CEO, Sheikh Ali Bin Jabor Bin Mohammad Al Thani.

Vodafone Qatar is also revolutionizing the telecommunications landscape by leveraging 5G, AI, and the Internet of Things (IoT). The company focuses on enhancing network performance and customer experiences through automation and personalized solutions, positioning itself as a leader in the region's digital transformation. "AI is changing our lives… Vodafone Qatar is preparing the infrastructure, ecosystem, and connectivity required for every machine to utilize AI capabilities in data centers," noted CTO, Ramy Boctor.

Qatar's commitment to AI also extends beyond its national borders. In February 2024, Qatar pledged to invest EUR 10 billion (USD 10.85 billion) in key sectors of the French economy, including artificial intelligence, energy transition, semiconductors, aerospace, digital technology, health, hospitality, and culture.

In line with its international collaboration efforts, Qatar has also partnered with the United Kingdom to launch a joint AI research commission to develop a strategic roadmap for UK-Qatar cooperation in artificial intelligence. This initiative is designed to foster innovation, drive ethical AI development, and deliver mutual benefits for both nations. Eman Al Kuwari, Digital Innovation Director from Qatar's MCIT, said, "By partnering with the UK and leveraging the expertise of world-renowned institutions, we aim to unlock new opportunities for innovation, shape ethical frameworks, and contribute to global progress in AI."

Challenges and Future Outlook

Despite Qatar's impressive progress in AI, several challenges still lie ahead. The race for global AI leadership demands ongoing innovation, talent development, and strong international alliances.

As nations adopt diverse approaches to AI, Qatar stands out by embedding cultural values and ethical considerations into its national strategy, offering a distinct and thoughtful model in the evolving global AI arena.

Looking ahead, Qatar's focus on education and talent development, as outlined in its AI strategy, will be crucial. By embedding AI across educational disciplines and fostering a culture of lifelong learning, Qatar aims to equip its workforce with the necessary skills to thrive in an AI-driven future.

By 2025, the National Skilling Program, launched in collaboration with Microsoft, aims to train 50,000 individuals in advanced digital competencies, including AI and data science.

Furthermore, the nation's commitment to ethical AI practices and public policy development ensures that technological advancements align with societal values and norms.

Sam Altman, CEO of OpenAI, spoke about AI's potential during his visit to Qatar, "The positive is [that] technology can create worlds which will be immense, and the main point I would like to make is that we are still at the very, very beginning, and that we can get immensely better with more skill systems."

Moving forward, as the nation continues to implement its comprehensive AI strategy, it will make significant contributions to the advancement of AI technologies and their responsible integration into society. TR

As nations adopt diverse approaches to AI, Qatar stands out by embedding cultural values and ethical considerations into its national strategy, offering a distinct and thoughtful model in the evolving global AI arena

Seven Factors to Consider in Modern Data Center Transformation

The global data center market is vast and rapidly growing. By the end of 2025, there will be 6,111 public data centers worldwide, 5,544 colocation sites, and 567 hyperscale sites. These facilities have become foundational to enterprise digital transformation, enabling the delivery of advanced technologies such as 5G, cloud computing, blockchain, and artificial intelligence (AI).

To manage the enormous volumes of data generated by these technologies, modern data center networks comprise a wide range of components, including servers, storage systems, networking hardware, and advanced software for efficient resource management and control. A data center's reliability hinges on its robust support infrastructure, including power subsystems, uninterruptible power supplies (UPS), backup generators, cooling systems, fire suppression mechanisms, and comprehensive physical security.

Investments in data center infrastructure are crucial for building

strong digital foundations, supporting both public and private sector goals in digital services, automation, and data analytics.

Infrastructure Upgrades to Meet Growing Demands

The shift towards AI and machine learning (ML) is dramatically reshaping infrastructure requirements. Traditional data centers, designed for 5–10 kilowatts per rack, are now struggling to keep pace with AI applications demanding 60 kilowatts or more. AI also generates significantly more data, requiring expanded capacity, already accounting for about 20% of global data center usage.

According to the International Energy Agency (IEA), data center energy consumption is projected to more than double by 2030, driven largely by AI workloads. This growth presents challenges for global energy security and emission reduction goals. Additionally, technologies like 5G, the Internet of Things (IoT), and the metaverse are creating demand for low-latency computing, further driving the growth of edge data centers. Meanwhile, user devices, increasingly equipped with ML accelerators, may influence future energy requirements in unpredictable ways.

To meet the Middle East's demands, Umniah has constructed the largest Tier III data center in Jordan, certified by the Uptime Institute, positioning the region as a digital hub through resilient, advanced infrastructure. Digital Dubai is advancing toward an AI-powered data center economy, reflecting its broader ambition to become a global leader in intelligent infrastructure and digital services. Infobip's data center in Saudi Arabia is boosting regional capacity and ensuring better performance and scalability for clients in the Kingdom and surrounding countries.

e& Carrier & Wholesale has expanded its Tier III SmartHub to Abu Dhabi, enhancing connectivity and offering cutting-edge infrastructure to meet growing regional demand. Nabil Baccouche, e& Group Chief Carrier & Wholesale Officer, noted:

"The hi-tech infrastructure and strategic location of Abu Dhabi will be a valuable asset to our customers and the wider business community."

At the same time, e&'s collaboration with Intel is fostering the development of distributed edge data centers, combining sustainability with innovation to deliver low-latency infrastructure at scale.

The Anatomy of Data Centers

Data centers are built around networks of computing and storage resources that deliver shared applications and data. Key components include routers, switches, firewalls, storage systems, servers, and application delivery controllers.

Data center interconnect (DCI) technologies link two or more data centers over various distances using high-speed, packet-optical connections. This enables seamless data sharing, backup redundancy, and disaster recovery. DCI technology supports a range of connectivity solutions, from simple point-to-point links to sophisticated reconfigurable optical add-drop multiplexer (ROADM) networks and open-line systems using multi-vendor components. The most effective DCI transport technologies use next-generation coherent optics, delivering speeds of up to 800 Gbps per wavelength. This allows physically separated facilities to operate as a unified infrastructure, sharing workloads and resources efficiently.

Some enterprises use DCI to link internal facilities, while others connect to partners, cloud providers, or colocation centers. Some DCI requirements prioritize high capacity and automation, while others are optimized using energy efficient or specific form factors. In the Middle East, DCI adoption is accelerating. Nokia's deployment of a DCI solution in 2021 marked a key milestone in regional connectivity. Building on this, du and UAE-IX created the first dedicated data center interconnection platform in the UAE, laying the foundation for seamless inter-data center communication. In Oman, the Oman-IX is enhancing the Sultanate's interconnectivity strategy, while Omantel's 400GbE DCI service, implemented alongside Ciena, delivers bandwidth and scalability.

Identifying Data Center Locations

Even cloud-based workloads ultimately run on physical servers located somewhere. The geographical placement of these servers impacts performance, cost, compliance, security, and resilience. Enterprises must weigh up numerous factors when selecting data center locations, and few regions can fulfill every requirement. Efficient cloud connectivity, proximity to industry ecosystems, network availability, a stable renewable grid, and climate conditions are some of the areas that need attention when choosing the location for data centers.

center3 is strategically expanding its footprint through a robust network of cable landing stations across Saudi Arabia, spanning Jeddah, Yanbu, Duba, Haql, and Al Khobar. According to center3, these landing points are critical in linking terrestrial and subsea infrastructure, positioning Saudi Arabia as a central hub for data flow between continents.

"By bridging east and west, the extended network through Saudi Arabia offers a low-latency route for traffic crossing between the continents. This is a game-changer for global communications, offering speed and efficiency that are critical for modern digital operations."

Further strengthening its global presence, center3's acquisition of CMC Networks is accelerating its growth strategy, unlocking access to over 110 service locations across Africa and the Middle East. According to Eng. Thamer Alfadda, SVP, Mobily Wholesale and Carrier Services, "As digital transformation and cloudification accelerate both at the business and consumer level, global internet traffic is doubling every two to three years."

"This necessitates the availability of state-of-the-art domestic and international connectivity infrastructure, along with data centers

where the content is locally hosted and interconnected at internet exchange points (IXPs)."

Evolving Data Center Design

To optimize operations, data center operators are adopting advanced software, connectivity solutions, and sensor technologies. AI and ML are increasingly being used for real-time optimization and automation.

For example, Nokia's SR Linux facilitates highly automated data center networking utilizing a model-driven management architecture, robust telemetry, and a Kubernetes-based platform. Features like intent-based operations, pre/post-checks, and digital twins help ensure reliability and reduce complexity. Huawei, another major player, is building intelligent computing infrastructure. Its solutions support clusters with up to 100,000 GPUs, meeting the needs of next-generation AI workloads. Moreover, the adoption of MTP® connectors is revolutionizing data center design by increasing speed, density, and reliability.

Energy and Sustainability Challenges

As energy demands rise, sustainability has become a critical issue. New reporting regulations are scrutinizing data center carbon footprints. According to the Uptime Institute, these regulations will challenge many operators to prove the practicality of their sustainability commitments, potentially affecting profitability and operational flexibility. On a positive note, in an exclusive interview with Telecom Review, David Erlich, Consulting Director at Sofrecom, explained that, "From a carbon footprint standpoint, the energy used by data centers appears greener."

"The move to hyperscalers has protected the digital world from an emission explosion."

Safeguarding Data and Regional Growth

Since 2017, the Middle East has seen a fourfold increase in data center infrastructure investment.
Efforts are underway in the Arab world to develop unified data protection regulations, similar to the European Union's General Data Protection Regulation (GDPR). Such legislation aims to foster trust and align digital growth with cultural values, enhancing the region's appeal for foreign investment.

While many enterprises are moving to the cloud, transparency and accountability still keep a majority of workloads in private facilities. An Uptime Institute survey found that 58% of organizations remain cautious about fully adopting public cloud solutions. Policy environments also play a key role. Supportive regulations that encourage innovation and data protection can significantly boost data center investment.

In an effort to safeguard data and regional growth, Cisco established a data center to ensure cloud-delivered security in Saudi Arabia and help customers protect their users, infrastructure, and investments against threat actors. The new data center supports Cisco's cloud services, including its secure service edge (SSE) solution, Cisco Secure Access.

Building Talent for the Future

Skilled labor is essential for efficient and profitable data center operations. For instance, in Saudi Arabia, Tuwaiq Academy, in partnership with the Uptime Institute, offers a six-month, intensive, data center training program. It prepares national talent for roles in advanced data center management across sectors. The program includes application-based bootcamps, globally recognized certifications, and practical training in specialized labs. Participants gain expertise in data center operations, design, and analytics, helping bridge talent gaps in this fast-growing field. Interestingly, data center personnel requirements are forecast to grow globally from about 2 million full time employees (FTE) in 2019 to nearly 2.3 million by 2025, suggesting a huge potential for future growth.

A Transformative Region for Data Center Growth

The influence of data centers extends beyond digital convenience; they are central to economic development and technological leadership. Countries that lead in data center infrastructure are often at the forefront of the digital economy, empowered by robust computing, storage, and networking capabilities. The Middle East has shown marked improvement in the development of data centers.

In the UAE, the cloud market is booming, with major providers such as Microsoft, AWS, Oracle Cloud, e&, and G42 Cloud competing in a concentrated and dynamic environment. The International Monetary Fund (IMF) has affirmed Saudi Arabia's leading position in the number of data centers among Gulf Cooperation Council (GCC) countries, reflecting the Kingdom's significant progress in developing digital infrastructure. Other countries such as Oman, Qatar, and Kuwait have made considerable progress in data center development in line with their respective national digital initiatives. TR

The move to hyperscalers has protected the digital world from an emission explosion

du Taps FreeMove Alliance to Support MNCs

du, the leading telecom and digital services provider, announced a partnership with FreeMove Alliance, the global mobile telecommunications alliance between Deutsche Telekom, Orange, Telia, and TIM. du is the first in the region to partner with FreeMove, marking a significant enhancement in its service offerings to multinational corporations (MNCs).

The collaboration aims to expand accessibility to premier telecommunication services worldwide, ensuring MNCs have the best possible support as they navigate global markets.

Karim Benkirane, Chief Commercial Officer at du, said, "We are thrilled to join forces with the FreeMove Alliance, marking a milestone in our journey to provide comprehensive global connectivity solutions. This partnership will help us enhance our service portfolio and strengthens our mission to serve the international business community with unparalleled telecommunications support."

The partnership marks an exciting expansion of FreeMove Alliance's reach into the Middle Eastern market, offering substantial benefits to both the alliance's operators and their international clientele engaging in business activities within the region. Furthermore, it propels du into the global arena, enabling the company to grant its multinational customers unparalleled access to some of the foremost mobile networks and services across Europe and globally, all while maintaining a robust relationship with their trusted telecommunications partner.

Selma Avdagic Tisljar, General Manager of FreeMove Alliance, said, "We are very excited to welcome du as part of our alliance, a trusted partner that will help us strengthen our presence in the Middle East and ensure that our multinational customers enjoy seamless, top-notch mobile connectivity."

Telecom Egypt Appoints Lobna Helal as First Female Chair

Telecom Egypt has announced a historic leadership change, appointing Lobna Helal as Chair of the Board, marking the first time a woman has held this position in the company's history.

Helal succeeds Dr. Magued Osman, who stepped down after nine years of service as a Chair since 2016. Her appointment marks a significant milestone for gender diversity in corporate leadership within Egypt's telecom industry.

Having been an independent member of Telecom Egypt's Board since March 2019, Helal brings over three decades of experience in banking and finance to her new role. She previously served as the Deputy Governor of the Central Bank of Egypt (CBE) for Monetary Stability Policies, with substantial contributions including monetary policy design, reserve management, and banking sector restructuring. She also holds Board positions in Egypt's Sovereign Wealth Fund and the National Bank of Egypt (London).

Helal highlighted, "I would like to extend my sincere gratitude to Telecom Egypt's Board of Directors for entrusting me with this role. It is a profound honor to serve as the first woman to chair the Board, and I embrace this responsibility with a deep commitment to upholding the highest standards of corporate governance, strategic oversight, and sustainable growth.

"With a career dedicated to financial stability, banking reform, and economic development, I look forward to leveraging my experience to further strengthen Telecom Egypt's position as a leading telecom provider. By drawing on my expertise in regulatory frameworks, risk management, and financial restructuring, I will work closely with my esteemed fellow Board members to drive innovation, optimize operational efficiency, and create long-term value for our stakeholders."

Mohamed Nasr's Reappointment

Alongside Helal's appointment, Mohamed Nasr has been reappointed as Managing Director and CEO for a second term. Nasr's leadership continuity is poised to accelerate Telecom Egypt's strategic initiatives, including advancing digital transformation and positioning the company as a regional data hub.

Emphasizing the Board's continued trust in his reappointment, Nasr noted, "Over the past few years, Telecom Egypt has made significant strides, and I remain committed to furthering our progress by delivering sustainable growth, driving innovation, and ensuring the highest standards of service for our customers."

Nasr added, "I look forward to working closely with the Board under the visionary leadership of Lobna Helal as the new Chair. Together, we will strive to achieve new milestones, solidify Telecom Egypt's position as a regional data hub, and lead the way in advancing digital transformation across Egypt and the region."

stc Group Q1 Results Highlight a Strong Start to 2025

Through its ambitious strategy and forward-looking vision, stc Group announced the company's preliminary financial results, showcasing an excellent performance during the first quarter of 2025.

For the first quarter of 2025, stc Group reported revenues of SAR 19,210 million, reflecting a 1.60% increase compared to the same period last year. Gross profit reached SAR 9,098 million, marking a 5.01% rise, while operating profit stood at SAR 3,584 million, up by 2.02%.

Moreover, the earnings before interest, taxes, zakat, depreciation, and amortization (EBITDA) totaled SAR 6,120 million, representing a 5.25% increase while the net profit for the quarter amounted to SAR 3,649 million, showing strong growth of 11.05% year-over-year.

Additionally, stc announced a dividend distribution of SAR 0.55 per share for the first quarter of 2025, in line with the dividends policy approved by the General Assembly.

The GCEO further added that, early in 2025, stc Group achieved several strategic milestones that further solidified its position in the telecommunications and information technology (IT) sector.

Among these achievements was a new global milestone, as the Group successfully localized the software for eSIM technology in collaboration with Thales, making stc the first telecom operator in the world to obtain SAS-UP license certification from the GSMA. The GCEO emphasized that this accomplishment complements stc's ongoing efforts to support local content in the information and communication technology (ICT) sector through business localization and the transfer of manufacturing and technical expertise to the Kingdom.

In continuation of the Group's efforts to enhance the digital communication infrastructure in the region, stc signed a strategic agreement with Ooredoo to establish an international ground fiber network corridor between Saudi Arabia and Oman. This strategic partnership aims to enhance the digital communication infrastructure in the region through the project, which starts with the Saudi-Oman corridor. The project will also create an integrated ground fiber network with two backup routes, connecting submarine cable landing stations on the Red Sea in Saudi Arabia to their counterparts on the Arabian Sea in Oman, passing through dedicated data centers in both countries. This agreement reaffirms the Group's commitment to delivering advanced communication solutions, enhancing intercontinental connectivity, and driving digital transformation to support the region's economic growth.

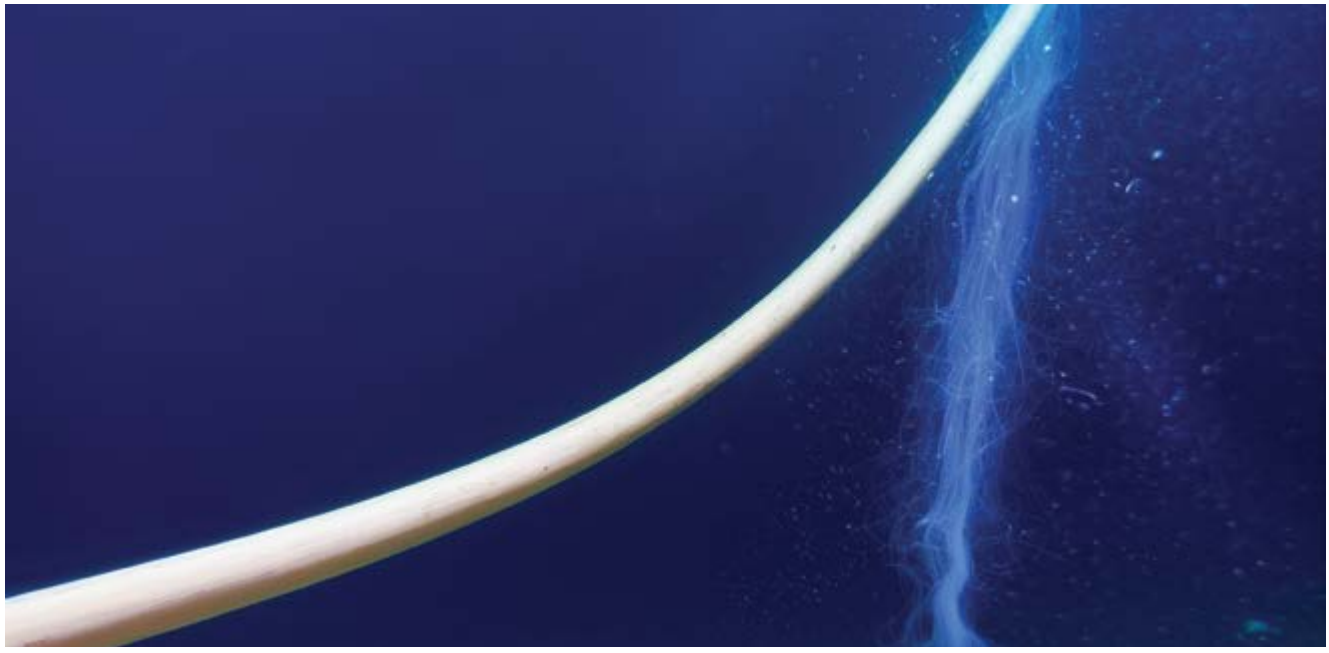
stc Group also strengthened its position in cloud computing and artificial intelligence (AI) by signing an agreement with Amazon Web Services (AWS). This partnership significantly boosts the Group's ability to deliver advanced technological solutions tailored to the diverse needs of various sectors, while reaffirming its commitment to driving the shift toward an integrated digital economy and leading the future of smart technology in the Kingdom and beyond.

Furthermore, as part of its commitment to providing the highest quality of digital services, stc Group enhanced its telecommunications network in the Two Holy Mosques during the holy month of Ramadan by strengthening its infrastructure to meet the growing demand for services during peak times. This upgrade resulted in a 120% increase in connection speed, enabling the Group to ensure an exceptional communication experience for visitors to the holy sites during the peak visitor periods.

Umniah Appoints Faisal Al Jalahma as Acting CEO

Umniah, a Beyon company, has announced the appointment of Faisal Al Jalahma as Acting Chief Executive Officer of the company, effective April 21, 2025. In his new role, Al Jalahma will be responsible for overseeing Umniah's operations, while continuing to perform his duties at Beyon without interruption, reflecting the company's keenness to maintain the stability of the management leadership during this transition period and benefit from his extensive experience in the field of information and communication technology (ICT).

Al Jalahma has close to 20 years of experience in the telecommunications industry in the public and private sectors, having held a number of executive and leadership positions at Batelco and Beyon, as well as the Telecommunications Regulatory Authority (TRA) in the Kingdom of Bahrain. He is also Chairman of the Digital City Development Company and Total CX, and a Board Member of Dhiraagu in the Maldives and Gulf Air Group in Bahrain.



Self-Healing Subsea Cables: Innovations Enhancing Underwater Infrastructure Reliability

Subsea cables are the backbone of global connectivity, and these undersea networks are essential for internet access, international communications, and energy transmission.

Despite their importance, subsea cables face numerous challenges. They are susceptible to physical damage from fishing activities, anchoring, and natural disasters such as earthquakes and underwater landslides. Additionally, the cables are vulnerable to deliberate sabotage, as evidenced by recent incidents in the Baltic Sea where suspected sabotage disrupted power and communication lines. Repairing these cables is a complex and costly endeavor, often requiring specialized ships and equipment, leading to prolonged downtimes and significant financial losses.

To address these vulnerabilities, self-healing technologies have been developed. Innovations include materials that can autonomously repair minor damages, thereby enhancing the resilience and longevity of subsea cables.

Investing in self-healing technologies represents a significant step toward ensuring the uninterrupted operation of critical infrastructure, both above and below waters, in an interconnected world.

Self-Healing Technologies in Practice

Advancements in self-healing technologies are revolutionizing the durability and maintenance of subsea cables. Three notable innovations in this field include microcapsule-infused insulation, self-healing fiber optic sensors, and fluid-filled, self-repairing cables.

Microcapsule-Infused Insulation

SINTEF, a Norwegian research organization, has developed an innovative insulation material incorporating microcapsules filled with liquid monomers. These microcapsules are designed to address "electrical trees," which are microscopic channels that form within insulation materials under electrical stress, potentially leading to short circuits.

When such stress-induced channels reach the microcapsules, they rupture, releasing the monomer that fills and

polymerizes within the channels, effectively halting further degradation. This self-repair mechanism enhances the lifespan and reliability of high-voltage (HV) subsea installations, reducing maintenance costs and downtime.

Self-Healing Fiber Optic Sensors

Researchers have also developed flexible fiber optic sensors utilizing a core-cladding structure made from polymerizable deep eutectic solvents (PDES). These sensors exhibit high transparency, flexibility, and a broad operational temperature, ranging from -27°C to 156°C. The supramolecular network within the PDES core provides self-adhesion and optical self-healing properties, ensuring stable signal transmission even after physical damage.

The hydrophobic cladding further allows these sensors to function reliably in underwater environments, making them ideal for long-term subsea structure monitoring.

Fluid-Filled, Self-Healing Cables

Northern Powergrid, in collaboration with the Energy Innovation Centre and Gnosys, has also introduced self-healing, fluid-filled power cables to reduce environmental impact and maintenance costs. These cables utilize a mixture of tung oil and metal soaps that, upon exposure to air due to a leak, form a cohesive mass sealing the breach. This self-healing fluid (SHF) mimics the natural clotting process, effectively preventing further leakage and environmental contamination. The implementation of SHF is projected to save Northern Powergrid up to GBP 20 million over five years by minimizing repair needs and associated environmental damage.

Collectively, these innovations signify a substantial leap forward in enhancing the resilience and sustainability of subsea cable systems. By integrating self-healing materials and technologies, the industry can expect reduced maintenance costs, extended service life of installations, and minimized environmental risks associated with cable failures.

Distributed Fiber Sensing (DFS) and Vibration Detection and Ranging (VID+R)

DFS technology transforms existing fiber optic cables into continuous sensors capable of detecting temperature changes, strain, and vibrations along the entire cable's length. The VID+R component enhances this by identifying and classifying external threats, such as anchor drags or fishing activities, in real time. This proactive monitoring allows operators to respond swiftly to potential damages, reducing repair costs and service interruptions.

Synaptec's Refase Technology

Synaptec has developed 'Refase'—a distributed sensor system that utilizes existing optical fibers within subsea cables to monitor electrical performance across multiple locations. By sending and reflecting light signals, Refase can detect faults and automate responses within milliseconds, enabling unaffected sections to resume operation promptly. This rapid fault detection and isolation minimizes downtime and maintenance costs.

ThayerMahan's SeaScout System

ThayerMahan's SeaScout system uses high-resolution synthetic aperture sonar (SAS) paired with advanced artificial intelligence (AI) algorithms to detect and classify potential damage to subsea cables before it leads to failure. By processing ultra-detailed sonar imagery, the system can spot anomalies early, enabling proactive maintenance and helping minimize service disruptions and repair costs.

CLEMATIS Integrated Monitoring System

The CLEMATIS project, funded by Innovate UK, introduced a multifunctional distributed sensor system to monitor subsea cable infrastructure. By integrating acoustic and thermal sensing capabilities into existing optical fibers, the system can detect temperature variations, mechanical stresses, and external disturbances like anchor strikes. This holistic approach ensures early fault detection and precise localization, enhancing maintenance efficiency.

Material Innovations

Advances in materials science are paving the way for next-generation, self-healing materials and coatings tailored for subsea cable applications. Researchers are increasingly turning to nanotechnology and intelligent coatings capable of sensing and responding to environmental stressors in real time. These innovations aim to significantly boost the durability and resilience of underwater cable systems.

One promising example is self-healing polyurea coatings, which can rapidly restore mechanical strength after damage. This built-in recovery mechanism offers ongoing protection against corrosion, helping extend the operational life of subsea cables while reducing maintenance needs.

Collaborative Efforts

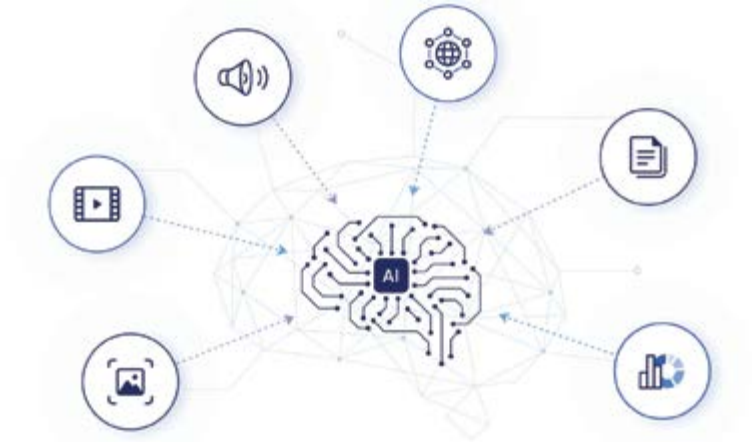
The advancement of self-healing technologies for subsea applications benefits significantly from collaborations between the industry and academia. Eelume AS and the Norwegian University of Science and Technology (NTNU) have exemplified how partnerships and academic research can drive subsea robotics innovation.

Additionally, international cooperation frameworks, such as the Quad Partnership for Cable Connectivity and Resilience, are bringing together countries such as Australia, India, Japan, and the United States to enhance the protection and resilience of submarine cables through shared research and policy development.

Call to Action

To future-proof the backbone of global digital and energy infrastructure, the industry must accelerate the development and deployment of self-healing technologies in subsea cables. By uniting the efforts of researchers, industry leaders, and policymakers, we can build smarter, more resilient subsea networks that safeguard connectivity for generations to come.

Now is the time to innovate boldly, collaborate widely, and commit to a future where underwater infrastructure heals itself before any failure strikes. TR



The Industries Set to Benefit from the Rise of Multimodal AI

Artificial intelligence (AI) is catalyzing a new technological era, with multimodal AI systems redefining how we interact with technology. Multimodal AI transcends the capabilities introduced by traditional AI, simultaneously interpreting and integrating information from multiple sources, including text, images, audio, and video.

A study by Research and Markets demonstrated its transformative potential, indicating that by 2034, the multimodal AI market will reach USD 27 billion—a significant leap from its USD 1.6 billion value in 2024.

This new frontier in AI technology is poised to understand complex scenarios, delivering richer and more accurate responses by enhancing real-time human-AI collaboration.

Transforming Lives with Multimodal AI

The advent of multimodal AI has transformed daily experiences, offering a more intuitive approach to technology. By integrating and analyzing information from multiple sources, multimodal AI represents a paradigm shift in how technology can influence human lives.

According to a study by GE Healthcare, 90% of all healthcare data comes from imaging technology. In healthcare, multimodal AI's potential is utilized for non-invasive breast cancer subtype classification, enabling enhanced diagnostic precision and personalized treatments. This multimodal framework integrates histopathological images and gene expression data to classify breast cancer into various categories.

In education, multimodal AI can create personalized learning environments by adapting content and teaching methods better suited to students.

Chatbots and virtual assistants (VAs) can interpret voice tone and text, enabling more natural conversations in customer service. Multimodal AI's ability also extends to natural language processing (NLP), merging audio and textual data to improve the system's understanding of the context. These advancements are powered by deep learning frameworks, such as convolutional neural networks (CNNs) for image recognition, recurrent neural networks (RNNs) for sequential data processing, and transformer models for comprehensive text analysis.

In an exclusive interview with Telecom Review, Prakash Siva, Senior Vice President, Head of Technology & Architecture at Radisys, added:

"Virtual assistants are redefining interactions by utilizing multimodal, human-like capabilities."

He noted that they are being trained on "custom data sets specifically developed for contact centers, B2B applications, and telecom services. These assistants turn real-time voice streams into insights via AI speech analytics and large language models."

Driven by advancements in deep learning techniques, which include enhanced image classification and recognition capabilities, the image data segment was valued at USD 565.4 million in 2024. The overall multimodal AI segment was valued at USD 740.1 million in the same year, primarily driven by the increasing demand for high-quality content creation across various digital platforms.

One notable example is DeepSeek's open-source multimodal AI model, Janus Pro 7B, which features advanced text-to-image generation and visual understanding. This innovation can handle complex queries, perform reasoning, and conduct deep analysis, with its multimodal understanding demonstrating superior performance over OpenAI's DALL-E 3 in text-to-image generation.

Challenges Associated with Multimodal AI

Despite its revolutionary potential, multimodal AI faces significant challenges that must be addressed.

According to Research and Markets, ethical AI governance, computational efficiency, and data fusion complexity continue to pose challenges.

As organizations align AI systems with societal values and accountability, the complexity of integrating diverse data types poses hurdles, requiring sophisticated algorithms to deliver accurate results. Businesses increasingly rely on AI-driven tools to optimize workflows, reduce errors, and boost productivity. However, these innovative tools require vast amounts of high-quality data for effective training, increasing the risks of misinterpretation or bias. Low-quality data can undermine an AI model's reasoning ability, leading to unreliable results.

Sophisticated AI models need advanced AI architectures, including transformers, capsule networks, and memory networks. However, they demand comprehensive training data and computational resources to facilitate real-time computation, making them costly to build and maintain.

To cater to the rise of multimodal AI, Richard Liu, President of ICT Marketing and Solution Sales at Huawei, emphasized that uplink bandwidth must expand tenfold to support multimodal interactions, with connections extending beyond human-to-human communication to include human-to-machine and machine-to-machine interactions.

Moreover, privacy remains a critical concern, particularly in multimodal AI systems processing sensitive information, including healthcare records, social media, wearables, and smartphones. Integrating data from multiple sources increases the risk of breaches, highlighting the growing need for a robust privacy approach and ethical guidelines to safeguard sensitive data.

Advances in Multimodal AI

Recent advances in multimodal AI are poised to revolutionize industries, with healthcare at the forefront. Microsoft Health and Life Sciences launched a fine-tuning capability for MedImageInsight in Azure Machine Learning, promising 93% fewer parameters and state-of-the-art results for medical imaging tasks. For instance, the model reduced radiologists' workload by 42%.

Google Cloud enhanced its Vertex AI Search platform for healthcare with multimodal AI capabilities by integrating a visual question and answer (Q&A) feature. This new feature will enable search through tables, charts, and diagrams, thoroughly analyzing patient records and information across numerous data sources and types in the healthcare sector. The Vertex AI Search with visual Q&A will respond to queries after evaluating forms, saving time and harnessing more accurate answers.

Beyond healthcare, Google released an AI Mode feature integrated into Google Lens. Powered by multimodal capabilities, this feature offers responses on extensive topics, multi-faceted search queries, and search topics requiring multiple searches. The tool allows users to click or upload an image alongside a query, prompting the AI feature to share comprehensive responses along with related links to the topic. Google's AI Mode can interpret the entire image, understanding the object's relationship, and unique materials, color, and shapes.

Cohere launched Embed 4, an advanced multimodal enterprise search supporting large volumes of data, including documents with texts and visuals. Embed 4 can generate embeddings for documents up to 128K tokens (around 200 pages) in length such as annual financial reports, product manuals, or detailed legal contracts, improving enterprise search accuracy.

Similarly, Alibaba Cloud introduced the Qwen2.5-Omni-7B into its AI Qwen series. This unified, end-to-end, multimodal system can process text, images, audio, and video while generating real-time text and natural speech responses.

OpenAI also launched its most advanced omnimodal technology models to date—the o3 and o4-mini—which are trained to think for longer before responding and can understand and generate text, audio, and video. Open AI's o3 and o4-mini models are powered by web search, Python, image analysis, file interpretation, and image generation, setting the groundwork for agentic AI systems.

Meanwhile, Meta introduced the Llama 4 series, which includes the Llama 4 Scout and Llama 4 Maverick models. These natively multimodal AI models integrate different data types, including text, image, and video, supporting text-in, text-out, and image-in, text-out use cases.

SenseTime initiated the SenseNova V6, leveraging advanced training in multimodal long chain-of-thought (CoT), global memory, and reinforcement learning to deliver industry-leading multimodal reasoning capabilities. Apart from having the lowest reasoning costs in the industry, the SenseNova V6 is also China's first large model to support in-depth analysis of 10-minute mid-to-long form videos.

Moreover, Apple introduced its first multimodal AI model, MM1, in 2024, which significantly enhanced Siri and iMessage's capabilities by enabling the understanding of images and texts. This is one outcome of Apple's daily multi-million-dollar investment in AI training, which began in late 2023.

Eleven Labs and Infer.so also collaborated to create a multimodal AI voice bot set to revolutionize the e-commerce and fintech industries with lifelike and contextually-aware voice interactions.

Final Thoughts

As AI continues to evolve, the world will see more human-AI advancements in the future. By enabling technology to process information from various sources, multimodal AI bridges the gap between human and machine understanding.

This pivotal leap in AI technology will not only enhance AI's existing capabilities but also pave the way for the development of more advanced AI systems.

The responsible deployment of multimodal AI will transform industries and shape the next generation of interconnected and highly intelligent solutions. TR

Huawei Unveils Comprehensive Suite of AI-Powered Solutions at MWC Barcelona 2025

As the telecommunications industry moves toward an intelligent era, artificial intelligence (AI) is poised to revolutionize every aspect of the digital world, enabling groundbreaking technologies that will reshape the future of the digital landscape.

At the Huawei Product & Solution Launch during Mobile World Congress (MWC) Barcelona 2025, Huawei revealed its innovative roadmap, showcasing a comprehensive suite of AI-powered solutions designed to transform network infrastructure, accelerate digital information, and propel the industry into a more intelligent, connected, and sustainable digital future.

AI-Centric Network Solution, Seizing New Opportunities in the AI Era

Yang Chaobin, Huawei's Director of the Board and CEO of the ICT Business Group, introduced the AI-Centric Network solution to address the growing demand for enhanced network bandwidth, lower latency, wider coverage, and improved operations and management (O&M).

In his keynote, Yang Chaobin highlighted the solution's four-layered approach, which includes all-domain connectivity, application-oriented O&M, enhanced AI-to-X services, and innovative business models. Through this strategy, Huawei aims to accelerate the transition towards an intelligent world while unlocking new revenue streams.

AI-Centric 5.5G, Igniting the Mobile AI Era

Building on an AI-powered network foundation, Cao Ming, Vice President of Huawei and President of Huawei Wireless Solution, noted that mobile AI aims to revolutionize the world by delivering intelligent, human-like experiences anytime, anywhere, and for everything. This shift towards 'AI for All' will drive three major transformations in the mobile industry. Firstly, it will transform the user experience from being downlink-focused to offering diverse capabilities. Secondly, it will evolve O&M from AN L3 to AN L4 intelligence. Thirdly, it will shift business models from traffic-based to multi-factor monetization.

Nokia Q1 2025: Network Infrastructure Drives Growth Amid Net Sales Decline

Global technology vendor, Nokia Corporation (Nokia), has released its interim report for Q1 2025, reporting an 11% growth in network infrastructure on a constant currency basis. Nokia's cloud and network services grew by 8%, while mobile networks increased by 2%.

The Q1 report saw a 3% year-over-year (YoY) net sales decline, reflective of a challenging year at Nokia Technologies and a one-time charge in mobile networks.

Nokia's President and CEO, Justin Hotard, highlighted the completion of the Infinera acquisition as a key milestone, noting that it boosted Nokia's optical networks unit by 15% with significant design wins. "We are on track to deliver our synergy targets, and I believe this acquisition has significant value creation potential for Nokia."

Cloud and Network Services

Cloud and network services grew by 8%, driven by 5G core adoption from major clients, such as AT&T, Boost Mobile, Ooredoo Qatar, and Telefónica. Nokia Technologies expanded its annual contracted net sales run-rate to EUR 1.4 billion through new deals.

Hotard emphasized, "I see great potential for Nokia, and my early focus is on capital allocation to ensure we both drive efficiency and invest sufficiently in the right growth segments for long-term value creation."

He added, "It is clear that we play a critical role as a trusted partner operating mobile and fixed networks and have the potential to expand our presence in hyperscale, enterprise, and defense markets."

2025 Outlook

Looking ahead, Nokia expects strong net sales growth in network infrastructure, cloud, and network services, and stable net sales for mobile networks, along with approximately EUR 1.1 billion in operating profit from Nokia Technologies.

The company anticipates a EUR 20 to 30 million tariff-related disruption, impacting Q2's operating profit. However, Nokia reaffirmed its confidence in achieving full-year (FY) targets by investing in future growth opportunities. The company is targeting a comparable operating profit of EUR 1.9 to 2.4 billion and free cash flow (FCF) of 50% to 80%.

ZainTECH Secures Saudi License in Major Expansion Move

ZainTECH, the integrated digital solutions provider of Zain Group, has achieved a significant milestone in its regional expansion strategy by securing a commercial license in Saudi Arabia that will pave the way for the entity to set up its regional offices in the Kingdom.

This transition from an investment license to full national entity status cements ZainTECH's long-term commitment to the Kingdom, allowing it to scale its advanced technology solutions across key sectors such as digital Internet of Things (IoT), cybersecurity, drones, artificial intelligence (AI), and cloud services.

The strategic move underscores ZainTECH's deep commitment to Saudi Arabia's digital transformation ambitions, fully aligning with Vision 2030. By strengthening its local presence, the company is poised to forge stronger collaborations, drive meaningful innovation, and provide tailor-made solutions that address the evolving needs of businesses and government entities in the Kingdom.

Andrew Hanna, CEO of ZainTECH, said, "Saudi Arabia is a vital market for us, and securing national entity status marks a defining moment in our growth journey. This step facilitates the opening of our regional offices and will allow us to operate with greater agility, contribute to the Kingdom's digital economy, and reinforce our mission to deliver world-class technology solutions that empower businesses and government bodies to better serve the dynamic and digitally savvy local community."

As part of ZainTECH's expansion to the Saudi market, the company is actively exploring strategic partnerships with both public and private sector organizations to accelerate the adoption of next-generation solutions that enhance efficiency, security, innovation and business resilience. This expansion is also set to create new opportunities for local talent, strengthen the Kingdom's digital infrastructure, and accelerate the adoption of emerging technologies across industries.

The commercial license follows ZainTECH's recent participation at LEAP 25, whereby the company announced a multitude of agreements with local entities, including a partnership King Khalid University to revolutionize digital education in the Kingdom; collaborations with both Najm Insurance Group and Diamond Policy and its SHAHIN Platform to drive digital transformation, cybersecurity, and technological advancements in KSA's insurance sector; and an agreement with Leejam Sports to drive the future of digital fitness in the Kingdom and beyond.

Masayuki Kayahara Promoted to SVP, Global Network Division, NEC

NEC Corporation has announced the promotion of Masayuki Kayahara to Senior Vice President of the Global Network Division, marking a new chapter in the company's global network strategy and leadership.

With over 25 years of experience at NEC, Kayahara has been a driving force behind the company's global telecommunications initiatives. His career began in 1999, and over the decades, he has held numerous leadership positions that have shaped NEC's global business development, particularly within the communications domain.

Most recently, Kayahara served as General Manager of the Service Provider Solutions Department within NEC's 5G Business Division under the Telecom Services Business Unit. In this position, he was responsible for overseeing business and solution development for communication service provider (CSP) customers outside of Japan. His work involved leveraging NEC's cutting-edge technologies—including wireless and optical communications, IP, and packet transmission—and forming strategic alliances with key global partners to bring holistic solutions to the global market.

Kayahara's appointment to SVP reflects NEC's commitment to further expanding its global network footprint. His experience across continents, particularly in Latin America, has equipped him with a strong understanding of the nuanced needs of regional markets. During his tenure in Brazil, Kayahara served as General Manager and Head of the Service Provider Business Unit at NEC Latin America. There, he led efforts to build a resilient business structure and improve support services for local and regional service providers—an achievement that continues to benefit NEC's operations in the region.

Throughout his career, Kayahara has demonstrated an unwavering commitment to innovation, strategic partnership development, and delivering value to global CSPs. His expertise in 5G, optical and IP transport networks, and his proven leadership in building cross-border alliances have positioned him as a key asset at NEC.

Middle East Governance Goes Digital

In recent years, Middle Eastern governments have embarked on ambitious digital transformation journeys to enhance efficiency, transparency, and citizen satisfaction.

Traditionally, government services in the Middle East were characterized by bureaucratic processes and in-person interactions. Recognizing the need for modernization, Arab countries have introduced comprehensive digital strategies.

Various initiatives now focus on leveraging technology to provide seamless, accessible, and efficient services to citizens and residents alike.

The 2024 United Nations E-Government Survey highlighted steady global progress, with Saudi Arabia, the UAE, and Bahrain earning top E-Government Development Index (EGDI) ratings. This reflects the Gulf Cooperation Council's (GCC) strong digital transformation, driven by strategic investments, economic diversification, and regional cooperation.

United Arab Emirates (UAE)

The UAE is advancing its digital identity system by introducing a facial recognition-based platform that will eliminate the need for physical Emirates ID cards when accessing key services.

This initiative is part of a broader push to streamline public service access through tools like the UAE PASS and UAEICP apps, which serve as unified digital identities for electronic document signing and service management.

In a similar context, the Telecommunications and Digital Government Regulatory Authority (TDRA) plays a key role in enhancing government efficiency through digital enablers. The TDRA's Digital Awareness Officer, Roudah Al Falasi, highlighted the authority's efforts to drive digital transformation.

Notably, the Dubai Centre for Artificial Intelligence (DCAI) has been established to train over 1,000 employees from more than 30 entities on generative AI (GenAI) and support the adoption of future technologies in government operations.

Saudi Arabia

In 2023, Saudi Arabia topped the UN ESCWA's (United Nations Economic and Social Commission for Western Asia) Government Electronic and Mobile Services (GEMS) Maturity Index, showcasing leadership in digital public services. A testimony to this success is the Ministry of Interior's Absher platform, which issued over 28 million digital IDs by 2024. These IDs facilitate secure access to a wide range of services via Absher or the national portal, Nafath, which offers single sign-on access to more than 530 government and private services. Nafath has already processed over 3 billion verification operations, simplifying service delivery and boosting user experience (UX).

To further boost digital infrastructure, Saudi Arabia's Zakat, Tax and Customs Authority (ZATCA) launched the FATOORA platform to digitize invoicing, making processes more transparent and efficient. The Kingdom also plans to invest USD 40 billion in artificial intelligence to drive innovation and become a global tech leader.

Qatar

In early 2025, as part of its National Digital Authentication and Trust Services Strategy (2024–2026), Qatar unveiled a unified digital ID system that will build a secure, integrated digital framework to enhance trust in electronic transactions while protecting personal data. The unified digital ID will streamline user access to a wide range of services, eliminating the need for multiple identities.

The strategy also includes developing regulatory frameworks for digital signatures, seals, and timestamping, with implementation planned in two phases. It emphasizes collaboration across government entities, individuals, and the private sector to ensure seamless digital integration.

In support of this vision, Qatar signed a five-year partnership with Scale AI to embed artificial intelligence into government services, targeting improved efficiency through predictive analytics and automation. Complementing this is the Ministry of Communications and Information Technology's (MCIT) Digital Factory initiative, which promotes the adoption of cutting-edge technologies like AI and blockchain to modernize public service delivery.

Oman

Oman's Government Digital Transformation Program, part of the National Program for the Digital Economy, is driving the shift toward a digitally enabled government guided by strong governance and emerging technologies. The initiative focuses on digitizing public services, enhancing digital infrastructure, and building national capacity for sustainable digital transformation.

In April 2025, signifying a key step toward promoting digital inclusion, the Ministry of Transport, Communications, and Information Technology (MTCIT), through its Tahawul program, launched the Digital Accessibility Guideline. This initiative is designed to ensure that all members of society, including people with disabilities and the elderly, can easily access and benefit from digital government services. The guideline supports the broader goals of Oman Vision 2040, which emphasizes service quality, inclusivity, and universal access to government offerings in the digital era.

A Vision for the Future of Digital Governance in the Middle East

The Middle East, particularly GCC countries, is on a transformative journey toward digital governance. Recent statistics underscore this momentum: GCC nations have achieved a net satisfaction score of 81% in digital government services while citizens in the region utilize these services 22% more frequently than their global counterparts.

Notably, 76% of GCC citizens have embraced AI-powered government services, and there's a remarkable 71% net trust in governmental use of AI, highlighting a strong foundation of public trust and readiness for AI-driven innovations.

To maintain and accelerate this trajectory of digital government advancements, continuous investment in digital infrastructure, data governance, and AI capabilities is needed.

The fusion of visionary leadership, technological innovation, and public engagement will shape a resilient and responsive digital future for the Middle East region. TR

> Various initiatives now focus on leveraging technology to provide seamless, accessible, and efficient services to citizens and residents alike

Not Only on "Earth Day" But Every Day: ICT's Mission for a Greener Future

In celebration of Earth Day's 55th anniversary, the 2025 theme, "Our Power, Our Planet," urges collective global action to fast-track the transition to renewable energy. The objective is to triple clean electricity output by 2030 by harnessing solar, wind, hydro, tidal, and geothermal sources.

In line with this, Telecom Review supports the information and communication technology (ICT) industry's ongoing push for sustainability, renewable energy in green data centers, and circular economy practices.

Telecom Review remains dedicated to spotlighting the industry's journey to achieving net-zero goals.

A Green Lens: 5G and AI for Net-Zero Goals

Electricity remains the primary source of energy consumption in the telecommunications sector. However, advancements in 5G-Advanced connectivity are paving the way for greater sustainability, enabling more efficient application development and enhanced network performance. These technologies also deliver notable gains in energy efficiency, significantly reducing power usage across smartphones, Internet of Things (IoT) devices, and mobile access networks.

Overall, the mobile telecommunications industry has committed to achieving net-zero carbon emissions by 2050, aiming to attain a 90% reduction in energy usage through the utilization of 5G technology, according to a GSMA study.

"By emphasizing ethical practices and sustainability, the goal of achieving a beneficial AI-driven future that aligns with social values, enhances economic growth, and minimizes environmental footprints can be realized," stated Abdullah Mohammad Khorami, Chief Business Officer at Etihad Salam Telecom Company.

As the energy demands of artificial intelligence (AI) systems and data centers increase, adopting renewable energy sources and designing energy-efficient systems will be essential to minimize the environmental impact.

To balance AI innovation with sustainable growth, Kenji Takemura, Head of EMEA Transport CoE at NEC, believes that "AI data centers should be more widely distributed to suburban areas where renewable energy is abundant and energy prices are moderate." NEC is supporting distributed green AI data centers with a flexible open architecture and ecosystem.

Majid AlNaqbi, Head of Data Center Business at du, agrees that sustainability is one of the important elements within data centers due to the successful results du has gained from implementing it. "On the energy side, we are advancing solar power generation and its implementation to further explore clean energy solutions," he explained. Additionally, du is working with other firms on their initiatives to identify and develop other clean energy sources.

Sustainability Takes Center Stage Among Tech Leaders

In alignment with its net-zero ambitions, du is focusing on key initiatives to reduce its carbon footprint, including improving energy efficiency and sourcing renewable energy. "Our net-zero ambitions are aligned to support the UAE on reaching net-zero emissions by 2050 and are designed to not only benefit the environment but also create economic opportunities and improve the quality of life for people in the UAE," highlighted CEO, Fahad Al Hassawi.

On the other hand, Nokia's strong commitment to energy efficiency is reflected in its innovative solutions, including its Virtual Power Plant, which supports solar energy integration, and its 'zero-traffic, zero-energy' feature, which powers down radio resources during idle periods to reduce energy consumption. The company is also targeting 100% renewable energy usage across its operations by 2025.

Turkcell also previously shared its ambitious plans for sustainability with Telecom Review. Aiming to provide the best and most affordable technology, in an energy-efficient way, the company has invested USD 240 million to build a solar panel energy plant and ensure that these technologies have "a minimal negative impact on the world, establishing a future where renewable energy is our foundation."

In 2023, Amazon Web Services (AWS) successfully met its target of powering all its operations with 100% renewable energy. Building on this progress, AWS has begun transitioning to renewable diesel for backup generators at its data centers across Europe and the Americas.

In addition, Vodafone Oman has cemented its position as a genuine pioneer and a driver of digitalization through its commitment to building a fully-green digital operation. "We are fostering a service that is kinder to the environment and is utilizing cleaner energy sources and smarter power management," CEO, Bader Al Zidi, expressed. Powered by only four racks, Vodafone's 5G Next Level network has set a groundbreaking standard for eco-conscious telecom networks.

Huawei is also working with regional partners to increase the use of green energy, improve power consumption efficiency, promote green energy development, and achieve energy conservation and emission reduction. "With long-term R&D investment in digital and power electronics technologies, we aim to accelerate clean energy generation; build green transportation, sites, and data centers; and contribute to zero-carbon buildings, campuses, and cities," shared Steven Yi, President of Huawei Middle East and Central Asia.

Green Milestones in the Gulf

To cater to energy-efficient connectivity in the cloud and AI era, both the Dubai Clean Energy Strategy 2050 and the Dubai Net Zero Carbon Emissions Strategy 2050 aim to ensure that 100% of Dubai's total power production capacity comes from clean energy sources by 2050.

A key player in this area is the Dubai Electricity and Water Authority (DEWA), which has been championing the implementation of sustainable solutions and objectives. "DEWA works to balance economic development with preserving the environment. This is accomplished by increasing the share of renewable and clean energy in Dubai's energy mix, enhancing performance, and improving energy efficiency," asserted Mohamed Obaid Alsharid, Chief Digital Officer.

Moreover, sustainability is a top priority at NEOM, the Kingdom of Saudi Arabia's futuristic mega-smart city. "This is not just about the renewable energy policies of one business; we are building an entire city," noted TONOMUS's Chief Growth Officer, Fabio Fontana. "We are looking at three types of renewable energy: wind, solar, and hydrogen."

Another notable example of a Saudi-based project that harnesses innovation for sustainability is the zero-carbon 5G network at The Red Sea, powered entirely by renewable energy via 760,000+ solar panels. Committed to long-term sustainability, Zain KSA has integrated green solutions throughout the project with its partners to minimize energy consumption.

Beyond "Earth Day"

In its analysis of the industry's current inflection point, Telecom Review found that robust digital innovation and 5G networks, purposeful regulation, and sustainable connectivity form the foundation of the next generation of green smart cities and industries. TR

The Benefits of Circularity in the Mobile Industry

Electronic waste, or e-waste, is a growing problem globally as technology continues to develop at speed. Adopting a circular economy model makes both device procurement and device retirement less wasteful as the circular model is a sustainable alternative.

The goal of the circularity model is to use fewer natural resources and minimize waste by repairing, reusing, and recycling materials.

For example, McKinsey research has shown that a circular economy in Europe can create a net benefit of EUR 1.8 trillion by 2030, while addressing mounting resource-related challenges, creating jobs, spurring innovation, and generating substantial environmental benefits.

Consumer Psychology to the Rescue

Studies show that while eight in 10 consumers have heard of e-waste, nearly a third do not understand it, and 18% have never heard of the term. A logical way to reduce e-waste as a consumer is by making smarter purchasing decisions. Opting for electronics that are durable, repairable, and built to last contributes significantly to sustainability and energy efficiency, whereas impulse buying often leads to unnecessary upgrades, contributing to the pile of discarded devices.

Many manufacturers now offer repair kits and replacement parts to extend the life of devices. Opting to repair electronics instead of replacing them saves consumers money, conserves valuable resources, and significantly reduces e-waste. Moreover, take-back programs offered by manufacturers simplify e-waste disposal, ensuring it is managed ethically and efficiently.

In modern society, materials and products that no longer perform their original function are deemed unusable; this practice is misplaced.

If we are to reach global climate goals, while continuing to increase global wealth, we must ensure that the concept of waste is not an integral part of modern society.

"The manufacturers have got responsibilities in terms of standardizing and making sure that they don't short-change the consumer, so the product that they produce should not have a short life cycle," said Cosmas Luckyson Zavazava, Director of the Telecommunication Development Bureau at the International Telecommunication Union (ITU).

Balancing Profitability and Sustainability

So, how can the tech industry sustain its profitability without manufacturing new devices?

Firstly, it's important to look at the market impact and trajectory. The refurbished and used mobile phone market size was valued at USD 53.81 Billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) Of 10.8% during the forecast period, reaching USD 120.96 billion by 2030.

The increasing number of equated monthly installment (EMI) options provided to consumers worldwide is the key factor expected to propel the growth of the refurbished and used mobile phones market.

In addition, increasing cost-efficiency benefits related to refurbished and used mobile phones are likely to fuel the growth of the target market.

Increasing e-commerce platforms' adoption for refurbished and used mobile phones between sellers and buyers is projected to create growth opportunities within the market over the forecast period.

Refurbished Device Market Constraints

A shortage of the top mobile phone models in the market may hamper the growth of the refurbished and used mobile phone market. In addition, the limitation of the used smartphone warranty period is anticipated to restrict the growth of the market.

How Artificial Intelligence (AI) Can Be Leveraged

Given its massive computing capacity, AI can enable circular economy innovation across industries, including telecommunications, in three main ways:

1. **Design Processes:** AI can enhance and accelerate the development of new products, components, and materials fit for a circular economy through iterative machine-learning (ML) backed processes, achieving faster prototyping and testing.
1. **Product Circulation:** By combining real-time and historical data from products and users, AI can help increase product circulation and asset utilization through pricing and demand prediction and predictive maintenance.
1. **Reverse Logistics:** AI can help build and improve the reverse logistics infrastructure required to 'close the loop' on products and materials by improving the processes to categorize and disassemble products, remanufacture components, and recycle materials.

Sustainability Efforts in Telecom

Apart from collaborating with international bodies such as the World Wide Fund (WWF) for various sustainable initiatives, Vodafone is offering high-quality refurbished phone handsets with a 24-month warranty, offsetting around 50 kg of carbon emissions compared to a new handset. During the manufacturing process, these handsets also require the extraction of 76.9 kg less raw materials. In addition, Vodafone SIM cards are supplied in half-sized card holders, made using recycled plastic. Vodafone is increasingly offering eSIMs by default when customers order their phones online.

UAE operator du's wide-ranging sustainability strategy encompasses significant energy efficiency initiatives. These initiatives include deploying solar panels on towers, implementing free-cooling systems, engaging in sustainable procurement practices, and actively addressing waste management. In addition, du's lead acid battery recycling initiative is a key contributor to its sustainability objectives, which focus on pollution reduction, resource conservation, and the minimization of hazardous waste.

Nokia is also championing the concept of a circular economy within

the telecom sector by reducing waste while also conserving resources and energy that would otherwise be used in manufacturing new equipment. Nokia's approach involves taking back or acquiring excess and obsolete products from customers and markets, then refurbishing, repairing, or remanufacturing these units to include them in the product supply chain.

Huawei is exploring optimal ways to build a low-carbon, circular economy and develop innovative solutions to make its value chain greener. Huawei complies with environmental laws and regulations, while integrating energy and resource efficiency and environmental benefits into its research and development (R&D), operations, procurement, manufacturing, and supply chain. The life span of nearly one million devices has been extended through its trade-in program.

Similarly, Cisco is designing its products to align with its 25 Circular Design Principles, organized across five focal areas. The five principles focus on using recycled materials, standardizing components for reuse and recycling, optimizing packaging with sustainable materials, enhancing energy efficiency, and designing products for easy disassembly, repair, and reuse.

Supporting Mechanisms in Place

In addition to consumer trends, government regulations and policies are emerging as an important driver of circularity, with regulations governing eco-design and right-to-repair initiatives emerging in Europe and North America. Other governments are actively considering regulations that could directly or indirectly support circularity.

Better data, statistics, policies, and legislation are needed to support countries and the electronic sector transition to a circular economy. The ITU is actively leading initiatives to promote circularity. Key initiatives include the E-waste Monitoring program, where the ITU collaborates with the Global E-waste Statistics Partnership (GESP) to track and publish data on e-waste generation, collection, and recycling. The ITU also contributes to the Solving the E-waste Problem (StEP) initiative and has partnered with the Circular Electronics Partnership (CEP) to advance a circular electronics industry.

In the area of recycling, the UAE has promoted waste reduction by pioneering efforts in e-waste recycling. The UAE Circular Economy Policy 2021–2031 serves as a comprehensive framework to ensure sustainable resource management and effective utilization of natural resources.

Extending the life of raw materials through improved durability, repairability, and recyclability warrants increased modular construction and efficient interchangeability of individual components. Key starting points include software development strategies to avoid software-related obsolescence or the delayed release of hardware licences, as well as providing open-source software codes for alternative repair providers.

Barriers to Circularity

The GSMA's 'Rethinking Mobile Phones: The Business Case for Circularity' report, published in February 2025, surveyed over 10,000 consumers across 26 countries and 31 mobile operators. It highlighted that while 90% of operators engage in at least one circular business model, such as refurbishment and e-waste management, 80% recognize significant untapped potential in scaling these initiatives. The report also identified financial barriers, including high upfront investment costs and pressure to prioritize short-term revenues, as challenges to expanding circular practices.

Furthermore, inconsistent regulations and policies globally, along with limited incentives for circular practices, are making it difficult for companies to transition.

According to the GSMA, the market for refurbished devices and repair services, projected to exceed USD 150 billion globally by 2027, offers new revenue streams for manufacturers and operators. Producing and supporting durable and repairable devices fosters customer satisfaction and loyalty, strengthens brand image, and resonates with environmentally conscious consumers and investors. Supply chain vulnerabilities and price volatility can be mitigated by opting for renewable energy sources, improving material efficiency, and reducing reliance on critical minerals.

In recent years, the circular economy has garnered attention alongside climate protection and the preservation of biodiversity; hence, it must be considered a top priority among all aspects of sustainable policy development in the mobile industry. TR

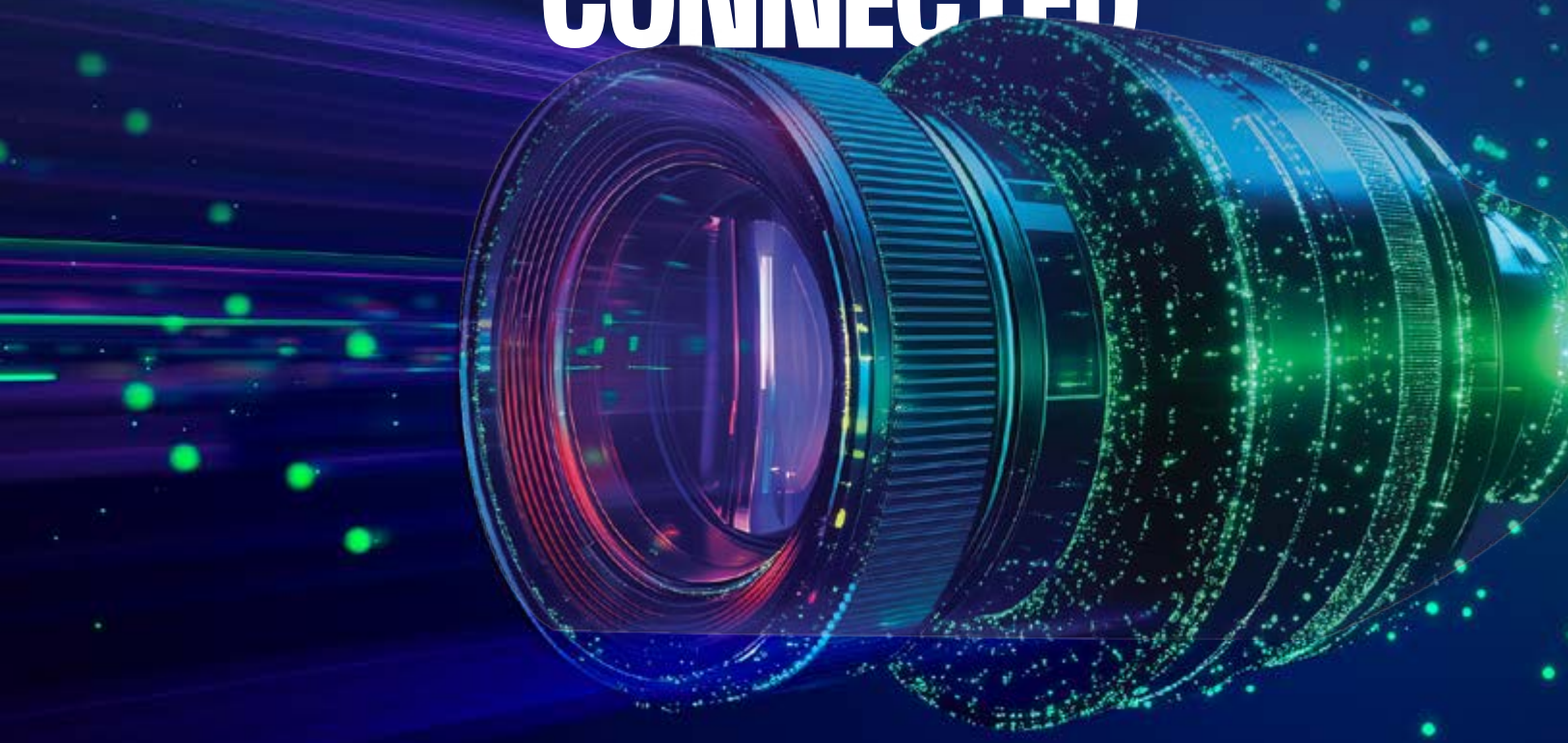
> The increasing number of equated monthly installment (EMI) options provided to consumers worldwide is the key factor expected to propel the growth of the refurbished and used mobile phones market

CABSAT

13-15 MAY 2025

DUBAI WORLD TRADE CENTRE

CREATIVE CONSCIOUS CONNECTED



BE PART OF THE FUTURE OF MEDIA AND CONTENT PRODUCTION

Tap into new business potential as thousands of key buyers, thought leaders and decision makers from over 120 countries come together to design, shape and co-create the future.

BOOK YOUR STAND

Organised by

مركز دبي التجاري العالمي
DUBAI WORLD TRADE CENTRE

@cabsatofficial

CABSAT.COM

NTNs and Satellites: Creating Future-Ready Ecosystems for Industries and Consumers

Is the connected world ready for a future where satellites power smartphones, farms, and even factories?

For Steven Doiron, EVP, Regulatory and Spectrum Affairs at Yahsat, these industries must "make sure that the offerings of 5G and satellites manage to exist in the same spectrum and in the same space."

Satellite and non-terrestrial network (NTN) technologies are rapidly evolving and spawning new ecosystems that go far beyond traditional satellite communications. These ecosystems are increasingly blending with terrestrial networks, cloud computing, and the Internet of Things (IoT).

Direct-to-Device (D2D) Connectivity

The global D2D market is expected to generate a total operator revenue of USD 2.8 billion from 2025 to 2029. During this period, direct-to-cell connections are projected to grow to 63 million by 2029, reflecting a substantial increase in user adoption.

Given the Middle East's commitment to advancing satellite communication technologies, as evidenced by initiatives like Yahsat's 'Project Sky' and Viasat's demonstrations in the United Arab Emirates (UAE) and Saudi Arabia (KSA), the region is capitalizing on the global growth of D2D connectivity. The integration of satellite technology with terrestrial networks can enhance connectivity across diverse sectors and geographies, addressing challenges in remote and underserved areas.

IoT via Satellite

In the Middle East and Africa (MEA) region, Grand View Research found that the satellite IoT market will reach over USD 191.2 million by 2030. Saudi Arabia is anticipated to register the highest growth rate in the region, reflecting its commitment to technological advancement and digital transformation.

In terms of use cases, the integration of satellite IoT modules in agriculture enables real-time monitoring of soil conditions and crop health, optimizing resource usage and yield. In logistics, satellite IoT facilitates end-to-end tracking of shipments, enhancing supply chain efficiency. For wildlife conservation, satellite-connected sensors aid in monitoring animal movements and habitats, contributing to preservation efforts.

5G-NTN Integration

The integration of satellite technology into 5G networks—enabled by 3GPP Release 17—is reshaping global connectivity, especially in regions underserved by fiber or microwave backhaul. 5G non-terrestrial networks allow low Earth orbit (LEO) satellites to backhaul mobile traffic and extend coverage to remote or disaster-hit areas.

Network vendors are leading the charge in this shift. Notably, Nokia teamed up with AST SpaceMobile, consequently achieving the world's first space-based 5G cellular broadband connection, while simultaneously providing connectivity to underserved regions around the world.

Companies like Apple, Huawei, ZTE, Qualcomm, Motorola, MediaTek, and Iridium have also formed strategic partnerships within the cellular mobile and satellite industries, indicating the upcoming introduction of satellite communications into the mainstream consumer market.

In the Middle East, Saudi Arabia's CST led the region's first successful NTN trials in 2024, testing smart devices connected via 5G-compatible satellites. This effort complements UAE-based du and SES's initiative, where SES's medium Earth orbit (MEO) satellites enabled 5G backhaul for enterprise use in remote areas like offshore oil fields.

Looking at other regions, 5G NTN solutions are being tested in Africa and Southeast Asia to help close the digital divide. These trials focus on providing rural broadband, aiding disaster recovery, and enhancing IoT and mobile services in areas with limited or no ground infrastructure.

Cloud and Edge Computing for NTN

The convergence of satellite networks with cloud and edge computing is enabling real-time analytics for applications like Earth observation (EO), disaster response, and IoT.

In the Middle East, this transformation is evident. For example, the Mohammed Bin Rashid Space Centre (MBRSC) in the UAE utilizes AWS Ground Station to downlink data. By integrating with AWS services, MBRSC accelerates image processing for applications, including wildfire monitoring and environmental assessments.

Satellite-as-a-Service Models

Satellite-as-a-Service (SataaS) models are providing access to space-based capabilities, enabling organizations to lease satellite capacity or task satellites on demand, without owning infrastructure. This democratization is particularly impactful in sectors such as agriculture, climate research, defense, and logistics.

In the Middle East, the SataaS ecosystem is gaining momentum. Bayanat, Yahsat, and ICEYE have expanded their domestic Earth observation satellite fleet to seven spacecraft, enhancing regional coverage and offering services tailored to local needs. This expansion supports applications operating in the environmental monitoring, urban planning, and disaster response fields.

In addition, Orange MEA and Eutelsat have formed a strategic partnership to speed up the rollout of satellite internet across the region. This collaboration focuses on bridging the digital divide by delivering broadband access to remote areas, ultimately enhancing digital inclusion in the region.

As Danial Mausoof, Market Head, Technology and Solutions for Mobile Networks, Middle East and Africa at Nokia, highlighted, "In an era where digital connectivity is synonymous with progress, bridging the digital divide has become a crucial focus for telecommunications companies worldwide."

Aviation and In-Flight Connectivity (IFC)

Local airlines are upgrading to LEO-

based satellite systems to achieve low-latency, in-flight internet. In October 2024, Qatar Airways became the first airline in the MENA region to offer SpaceX's Starlink high-speed internet onboard. The inaugural flight, QR1 from Doha to London Heathrow, provided passengers with free Wi-Fi, delivering download speeds of up to 215 Mbps. This service supports seamless streaming, video calls, and online gaming throughout the entire flight. By the end of 2025, Qatar Airways plans to equip all its Boeing 777s and Airbus A350s with Starlink.

Emirates has also rolled out Airbus's HBCplus satellite communication system on its new A350-900 aircraft, a first in the Middle East. This cutting-edge technology provides high-speed, low-latency global connectivity, improving the passenger experience on medium- and long-haul flights.

Meanwhile, Saudi Arabia's new airline, Riyadh Air, has partnered with Viasat to offer fast, free in-flight connectivity for its loyalty program members. Available on Boeing 787 Dreamliners, this service allows passengers to enjoy streaming, social media access, and web browsing from gate to gate.

In the future, air-to-ground (A2G) technology will offer distinct advantages in live communication, notably due its extensive equipment compared to satellite systems. According to Ramy Moselhy, Chief Strategy Officer at SCIT Group, "A2G technology boasts higher capacity in communications, providing air passengers with increased speed and capacity during flights."

Connected Vehicles and Smart Mobility

The 3GPP Release 18 introduces significant enhancements to vehicle-to-everything (V2X) communications via satellite. These advancements aim to provide robust connectivity for autonomous vehicles (AVs), especially in areas lacking terrestrial network coverage. Key improvements include better support for sidelink communication, improved positioning services, and enhanced integration of satellite access into the 5G system.

Major automotive manufacturers, including Toyota, Hyundai, and Nissan, are actively exploring satellite-enabled V2X solutions to enhance vehicle safety and connectivity. LEO satellite providers are collaborating with these original equipment manufacturers (OEMs) to facilitate real-time navigation, over-the-air updates, and emergency communication services, particularly in remote or underserved regions.

Earth Observation Data-as-a-Service

Earth Observation Data-as-a-Service (EO-DaaS) is rapidly reshaping how the planet is monitored. In fact, the global EO market alone is expected to exceed USD 8 billion by 2033, rising from its current value of around USD 5 billion. This growth is being driven by increasing defense and government contracts, as well as breakthroughs in high-resolution imaging and 3D Earth modeling.

A major recent development is TerraMind, an open-source artificial intelligence (AI) model launched by IBM and the European Space Agency (ESA) for Earth and climate monitoring. Built on TerraMesh—the largest geospatial dataset ever assembled—TerraMind delivers a new level of performance and efficiency in satellite-powered analytics.

In the Middle East, momentum around environmental, social, and governance (ESG) goals and climate finance is fueling greater interest in EO solutions. As the demand for real-time environmental intelligence rises, the region is expected to increasingly adopt satellite-based analytics for sustainable agriculture, carbon tracking, water resource management, and climate risk assessment.

NTN for Industrial Private Networks

In the Middle East, the oil and gas (O&G) sector is exploring the deployment of satellite-enabled private 5G networks to enhance operational efficiency and safety. Given the region's extensive oil and gas infrastructure, integrating NTNs can provide robust connectivity solutions at remote drilling sites and offshore platforms.

Mining operations in remote desert regions of the Middle East are also reportedly adopting NTN-enabled networks to support autonomous machinery, real-time environmental monitoring, and safety systems. These networks facilitate continuous data transmission from sensors and equipment, enhancing operational efficiency and worker safety.

As the Middle East invests in renewable energy, offshore wind farms are being developed in areas with limited terrestrial connectivity. NTN-enabled private 5G networks provide the necessary communication infrastructure for monitoring and controlling wind turbines, ensuring optimal performance and rapid response to fluctuating environmental conditions. TR

The integration of satellite technology with terrestrial networks can enhance connectivity across diverse sectors and geographies

Revolutionizing User Convenience with Ambient Invisible Intelligence

Today's digital era represents a paradigm shift in how we interact with the world; technology is increasingly blending with human lives.

The spike in popularity of artificial intelligence (AI) in recent years has accelerated its development dramatically, transforming it from a theoretical concept to a pervasive reality.

As Guillaume Boudin, CEO, Sofrecom Group, aptly stated, "The exponential growth of artificial intelligence is transforming consumer and business-to-business (B2B) uses cases."

AI's rapid transformation has led to the advent of ambient invisible intelligence (AII), an intelligent system that can sense, analyze, and execute without unequivocal user commands. According to Mordor Intelligence, the ambient intelligence market is projected to leap from USD 123.28 billion in 2025 to USD 238.83 billion by 2030, growing at a compound annual growth rate (CAGR) of 14.14%.

As we navigate the increasingly interconnected world, AII is another frontier of AI technology bound to shape the future of smart environments and human convenience.

Traditional AI vs Ambient Invisible Intelligence

In the pursuit of enhancing the design of everyday tech, AII is making devices more intelligent by acting without direct human instruction.

Demanding constant human oversight, traditional AI emerged with limitations, specializing in predefined tasks. It requires explicit input, such as voice commands, text prompts, or app controls to operate. Meanwhile, ambient intelligence (AmI) marks a substantial shift, transforming into an active participant, anticipating needs, and adjusting lighting or temperatures based on subtle cues.

Unlike AmI systems that still require visible interfaces, such as smartphone alerts, voice prompts, or app-based controls, AII operates autonomously and anticipates needs without human intrusion, indicating a significant leap from constant user participation. This intelligent system gathers data and executes actions seamlessly in the background, personalizing user experiences (UX) by integrating AI, machine learning (ML), and Internet of Things (IoT). It relies on sensors, advanced data analytics, and context-aware computing to create environments that adapt in real time. AII's sensor networks collect data through movement, heat, light, and sound, and integrate it into systems.

AII utilizes advanced chips for sensors and communication and focuses on bluetooth low energy (BLE) and next-generation wireless services, such as 5G. Its core feature lies in its invisibility, embedding itself into environments where users rarely notice its presence.

Navigating the Challenges of AII

While AII promises to simplify daily lives, its adoption raises various concerns. From facial recognition to environmental pattern monitoring, AII's constant reliance on data collection requires stringent measures to protect user privacy.

During LEAP 2025, Abdullah Mohammad Khorami, Chief Business Officer at Etihad Salam Telecom Company, elaborated on this, noting that, "Given that AI systems process vast quantities of data, safeguarding user privacy and ensuring the protection of data is crucial."

"Ethical considerations encompassing consent, data collection, and usage policies are fundamental to gain trust and encourage wider adoption of AI technologies."

The Information Systems Audit and Control Association (ISACA) highlighted that facial recognition technology (FRT) poses substantial privacy, security, and vulnerability issues, including a lack of transparency and consent, unencrypted facial data, technical liabilities, and inaccuracy.

AI bias remains a persistent threat, particularly when flawed data spreads inequality. Notably, 77% of companies that tested their AI systems found that the systems they'd created were biased. It is important to note that AI bias does not happen by accident, but rather exists in the training set. Beyond this, AII's environmental footprint poses another challenge as its sensors constantly consume energy.

AII Applications: Driving Interconnected and Intelligent Environments

AII is revolutionizing daily life, embedding itself particularly in home automation. In this environment, traditional smart thermostats analyze preset schedules, while AII-powered systems such as ecobee's smart thermostats (SmartSensor) evaluate occupancy patterns and weather forecasts to preheat or precool homes before residents arrive.

Similarly, Philips Hue's motion sensor lighting eliminates the need to use manual switches by triggering smart lights to turn on or off, while TP-Link's Tapo smart plug automatically cuts power to prevent overcharging, conserve energy, and protect devices.

Digital assistant, Alexa, utilizes sound cues and visuals (voice chrome) to initiate smart home interaction without user prompts. Recent advancements have enabled Alexa to act on "hunches", making adjustments based on usage habits.

Within the health-related ecosystem, WELOV, the world's first matter-smart air purifier, syncs with Apple Health to adjust fan levels according to sleep patterns. Known for creating the first health-enhanced wearable watch, Withings's smart watch tracks sleep patterns and heart rates, detects the onset of illnesses by monitoring body temperature fluctuations, and provides health insights without user intervention. Its cardio check-up feature offers users electrocardiogram (ECG) reviews from cardiologists within 24 hours.

In retail, AII is used by Amazon Go Stores in its checkout-free shopping feature, which utilizes sensors to track purchases automatically. The smart manufacturing sector is also leveraging predictive maintenance to prevent machinery breakdowns, with smart tags optimizing inventory management in real time.

Furthermore, smart cities benefit significantly from AII. Sensors monitor traffic to optimize signal timings and reduce congestion, while tracking air quality, noise levels, and energy usage to improve quality of life. That being said, Marc Veelenturf, CEO of Middle East and Turkey at Atos, pointed out, "To build smart cities and enable hyper-connected communities, one of the key challenges is managing large amounts of data from various sources and integrating multiple technologies and systems into a cohesive and interoperable ecosystem."

To combat this, Zain KSA is utilizing Atos's Smart Destination platform to facilitate smart city initiatives and improve the quality of life for residents across the Kingdom. The Smart Destination platform provides a centralized data management system that allows for easy integration and analysis of data from multiple sources.

Regionally, North America is witnessing a growing adoption of AmI- and AII-powered smart home technologies, such as smart thermostats, lighting systems, security cameras, and voice-activated assistants in their homes. In contrast, Europe is advancing its smart city and urban management initiatives, integrating advanced AI in traffic, transportation, and waste systems. Fortune Business Insights also predicted that the Asia Pacific will display the highest CAGR, driven by rapid smart city developments, particularly in China, Japan, South Korea, and Singapore.

Meanwhile, the Middle East and Africa (MEA) is expected to remain at the forefront of AI-adopting regions, driven by the rapid developments of Middle Eastern countries, such as the United Arab Emirates, Saudi Arabia, and Qatar, in the AI field. For instance, the UAE has launched various AI-driven governance, transportation, and public safety projects to advance its vision of an intelligent future. The recent launch of Dubai's State of AI Report and the UAE's AI Strategy 2031 further exemplifies the nation's goal to be at the forefront of the global technological race.

Furthermore, H.H. Sheikh Khaled bin Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of Abu Dhabi Executive Council, has issued a resolution and intends to establish the Smart and Autonomous Systems Council (SASC). The council aims to advance a supportive and attractive environment for the development and use of smart and autonomous systems in Abu Dhabi.

The Trust-Convenience Paradox

As technology advances, it not only assists but weaves into the fabric of human lives, silently anticipating needs.

AI has evolved as an invisible architect of modern lives, acting autonomously and reshaping how we interact in the digital era.

However, AII's seamless integration demands constant data collection that may be at risk if any system goes rogue. The growing reliance on AI-driven systems is making users question how much personal autonomy they are willing to surrender for convenience.

To what extent will users trust technology to monitor their behaviors and routines? TR

SSC

SUBSEA CABLES

BY TELECOM REVIEW

SUBSEA CONNECTIVITY MEDIA CORRIDOR

WWW.SUBSEACABLES.NET

Ethio telecom and Siinqee Bank Unveil New Mobile Finance Solutions

Ethio telecom, in partnership with Siinqee Bank, has launched new mobile financial services and smartphone financing solutions to advance Ethiopia's financial sector and improve digital inclusion.

Building on the success of telebirr, which boasts over 52.5 million subscribers, the new services provide rural and urban citizens with access to savings accounts, microloans (through the 'Enderas' microcredit service), salary-based loans, and device financing.

More on ethio telecom: Ethio telecom and Visa Deepen Ties to Boost Ethiopia's Digital Finance

One of the key offerings includes interest-free and interest-bearing savings, alongside microloans of up to ETB 30,000.

Additionally, employees from private and public institutions, including staff from Ethio telecom and Siinqee Bank, will be able to borrow up to five months' worth of their salaries, with a cap of ETB 1 million and a repayment period of 14 months.

Moreover, the distribution of up to two million smartphones annually to underserved communities via the Device Financing program aims to make it easier for low-income citizens to own smartphones and access telecom and digital services.

The initiatives, part of Ethio telecom's broader commitment to digital and financial empowerment, aim to disburse up to ETB 10 billion in loans and ETB 4 billion in device financing support each year, strengthening Ethiopia's digital economy.

Nokia RAN Innovation Accelerates T-Mobile US's 5G Network Evolution

Nokia announced a significant multi-year extension of its strategic partnership with T-Mobile US, further expanding and enhancing the Un-carrier's industry-leading, nationwide 5G network coverage and capacity.

T-Mobile's network already reaches more than 98% of the U.S. population, and this collaboration demonstrates its commitment to further extending its high-performance 5G capabilities.

Under the agreement, Nokia will supply its industry-leading AirScale Radio Access Network (RAN) portfolio, including its latest generation Habrok Massive MIMO and Levante Ultra-Performance baseband solutions. These are powered by its energy-efficient ReefShark System-on-Chip technology and will boost T-Mobile's 5G network to achieve maximum performance, efficiency, and reliability. Nokia will also deploy its artificial intelligence (AI)-powered MantaRay SON and AutoPilot, a self-organizing network solution for optimization and automation. The deal includes hardware, software, maintenance, and support services.

This collaboration will also advance T-Mobile's network evolution by leveraging next-generation RAN architectures that enhance agility, scalability, and operational efficiency. Nokia will continue to support T-Mobile's groundbreaking AI-RAN initiatives, including the ongoing technology partnership at T-Mobile's AI-RAN Innovation Center, launched last year. The center is dedicated to integrating AI into RAN to revolutionize network experiences and deliver stronger business outcomes.

Verizon Beats Q1 Earnings Estimates on Healthy Wireless Traction

Verizon Communications recorded relatively healthy first-quarter 2025 results with adjusted earnings and revenues beating the respective Zacks Consensus Estimate.

The company recorded consolidated retail prepaid net additions of 137,000 in the quarter – the best since TracFone acquisition. However, both retail postpaid and retail postpaid phone net additions contracted owing to elevated pricing actions in the Consumer segment and pressure from federal government accounts.

Net Income

On a GAAP basis, net income in the quarter was USD 4.98 billion or USD 1.15 per share compared with USD 4.72 billion or USD 1.09 per share in the prior-year quarter. The improvement was primarily attributable to top-line growth. Excluding non-recurring items, quarterly adjusted earnings were USD 1.19 per share compared with USD 1.15 in the prior-year quarter. The bottom line beat the Zacks Consensus Estimate by 3 cents.

Revenues

Quarterly total operating revenues improved 1.5% to USD 33.48 billion with growth in service revenues and higher wireless equipment revenues driven by targeted pricing actions, customer growth, sales of perks and add-on services and growth in fixed wireless access. The top line beat the consensus estimate of USD 33.32 billion.

Quarterly Segment Results

Consumer: Total revenues from this segment improved 2.2% year over year to USD 25.62 billion on higher service revenues. The segment revenues exceeded our estimate of USD 25.23 billion.

Service revenues were up 2.3% to USD 20.07 billion, while wireless equipment revenues improved 0.9% to USD 4.53 billion. Other revenues totaled USD 1.02 billion, up 8.2% year over year.

European Operators Grapple with the Complexities of Legacy Network Shutdowns

As Europe races toward a digital-first future, its mobile operators are encountering a major hurdle: the delicate and complex process of shutting down aging 2G and 3G networks.

While newer technologies like 4G and 5G offer faster, more efficient, and cost-effective solutions, many users and machines still rely on native infrastructure. This legacy dependence is proving to be a major hinderance as Europe tries to modernize its mobile ecosystem.

According to the Global Mobile Suppliers Association (GSA), globally, as of the end of 2024, 128 operators have completed or planned 2G closures, while 126 operators in 54 countries are planning to cease 3G networks.

In Europe, countries like Norway, Finland, and the Netherlands are leading the way, as users in these regions are spending little-to-no time on legacy networks. Contrastingly, in Eastern and Southeastern Europe, 2G and 3G are still in use.

Moldova, for example, has one of the highest usage rates of 2G and 3G connections in the region, with users spending nearly 18.9% of their time on these older networks. This figure demonstrates that, despite efforts to migrate users to 4G and 5G, not all populations and devices are ready to make the leap.

The Push and Pull of Progress

From an operator's perspective, maintaining these older networks is expensive and inefficient; thus, sunsetting the networks allows carriers to repurpose valuable spectrum, reduce energy consumption, and improve service delivery across newer technologies.

One significant challenge lies in the diversity of user behavior and technological adoption across Europe. While urban centers and affluent regions may have moved on from 3G, rural and economically disadvantaged areas often still rely on it for basic connectivity. The divide is not just consumer-driven either; businesses and critical infrastructure continue to depend on 2G and 3G for machine-to-machine (M2M) communications.

Who Goes First?

Operators must make strategic choices about which legacy technology to retire first. Many have opted to phase out 3G first due to its higher operational costs and its lack of unique advantages compared to 4G. Meanwhile, 2G networks, with their simpler architecture and widespread M2M use, are often kept online longer, despite offering limited data capabilities.

Ghana Confirms 5G Launch Under Next Generation Infrastructure Company

Ghana's Minister for Communication, Digital Technology, and Innovations, Sam George, has reaffirmed the government's commitment to launching 5G services by June 2025.

The rollout will be led by the Next Generation Infrastructure Company (NGIC), which has been tasked with building and managing the country's 5G network.

This initiative marks a major step in Ghana's efforts to enhance its digital infrastructure, expand high-speed connectivity, and drive economic growth through advanced technology. By introducing 5G, Ghana aims to strengthen its position as a digital hub in the region, fostering innovation, supporting businesses, and improving access to digital services for citizens across the country.

Vodafone and A1 Debut 5G SA Roaming

Vodafone Group and A1 Telekom Austria Group have successfully established a 5G standalone (5G SA) roaming connection, marking a first-of-its-kind milestone between two independent telecom operators.

As a result, an A1 Bulgaria subscriber was able to access Vodafone Germany's 5G SA network using a standard consumer device. Unlike 5G non-standalone (5G NSA) networks that rely on legacy LTE infrastructure, 5G SA offers a fully-independent, cloud-native architecture, unlocking the full suite of 5G capabilities, including ultra-fast speeds, low latency, and immersive voice features, such as surround sound.

The trial was completed using Ericsson's dual-mode 5G Core and Security Edge Protection Proxy (SEPP) platforms, which deliver robust cross-border data protection and end-to-end encryption in line with GSMA guidelines. SEPP technology secures inter-network communication by encrypting data, validating digital signatures, and safeguarding network topology.

Vodafone's Chief Network Officer, Alberto Ripepi, emphasized the innovation's real-world impact, noting that, "ultimately, 5G SA roaming will enhance the customer experience at international events like football championships and provide the same consistent, fast connectivity at a company's warehouses and factories across many markets."

The trial also demonstrated the power of interoperability, utilizing 3GPP and GSMA-defined standards to automate and streamline the setup of inter-operator connections. This standards-based approach paves the way for faster, more scalable global deployments.

— 2025 —

ITW USA

International Telecoms Week (ITW) showcases groundbreaking technologies to transformative networking opportunities, connecting the global connectivity market, encompassing satellite, subsea, and terrestrial communication.

Place: May Gaylord National Resort & Convention Center National Harbor, Washington

04 - 07 MAY

GISEC Global

Established as Middle East and Africa's largest cybersecurity event, GISEC Global presents globally-renowned speakers that address the current threat landscape and emerging cybersecurity trends for 2025.

Place: Dubai World Trade Centre, UAE

06 - 08 MAY

FutureNet World

International tech industry leaders and enthusiasts will converge to discuss the strategic and commercial priorities in today's digital world.

Place: Novotel London West, London

07 - 08 MAY

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

Latest updates on:
www.telecomreview.com

— 2025 —

World Telecommunication Day: Shaping Industries

Telecom Review will host a webinar to explore the evolving dynamics of the telecommunications industry, aligning with the World Telecommunication and Information Society Day (WTISD) 2025 theme: Gender Equality in Digital Transformation.

Place: Virtual

15 MAY

ETEX

Hailed as the digital transformation driver in Ethiopia, the event will focus on the latest in cybersecurity, AI, smart cities, fintech, tech education and the overall IT services market.

Place: AICC, Addis Ababa, Ethiopia

ETEX
ETHIOPIAN TECH EXPO 2025
SHAPING ETHIOPIA'S DIGITAL FUTURE
INNOVATION | SECURITY | TRANSFORMATION

16 - 18 MAY

FutureNet MENA

FutureNet MENA 2025 brings the whole ecosystem together to drive the agenda around network automation and AI, a key foundational pillar for the next wave of growth.

Place: Conrad Hotel, UAE

FUTURENET MENA

27 - 28 MAY

Asia Tech x Singapore

Asia's flagship tech event brings the latest in the ICT industry through three main segments-ATxSummit , ATxEnterprise and ATxInspire.

Place: Singapore Expo, Singapore

ATX SG

27 - 29 MAY

Latest updates on:
www.telecomreview.com

TELECOM Review TV
telecomreview.tv

WATCH THE ICT CONTENT ON THE ONLY TV WEBSITE

WWW.TELECOMREVIEW.TV

WATCH
LIVE
WATCH **NOW!**

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

Leading Global ICT Media Platforms

Middle East

Arabia

Africa

Americas

Asia

Europe