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Elon's Twitter Logo Change to Dog Makes Dogecoin Price Jump

Tech billionaire Elon Musk's decision to change the Twitter logo blue bird to a Shibu Inu dog – an icon associated with the digital token – caused the price of Dogecoin to shoot up by more than 20%.

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Nokia Forges Ahead as a B2B Technology Innovation Leader

Nokia recently unveiled its renewed brand and logo, the concept of which represents the company's commitment to sustained long-term growth, enabled by a bold and ambitious vision for the future. In an exclusive interview with Joachim Wuilmet, head of field marketing, Nokia MEA, Telecom Review garnered details about Nokia's brand strategy, unique position in the Middle East and Africa region, ESG initiatives and partnerships, as well as the company's tireless preparation for where it is headed next.

ongratulations on Nokia's brand renewal! What were the drivers behind this change? Thank you for giving me the chance to discuss our brand 'renewal' with you. We're excited to share that, while we're still Nokia, our brand has gone through a major refresh. We've taken a bold step forward to define who we are today and where we're headed in the future.

At Nokia, our purpose is to create technology that brings the world together. We believe that the potential of digital transformation is immense, and it has the power to revolutionize businesses, industries and societies. But for this to happen, we need to ensure that organizations, machines, devices and people are all in sync.

We understand that markets are rapidly transforming, and companies are



striving to improve efficiency, flexibility and productivity in a sustainable way. Digital transformation is crucial to this process, and Nokia wants to play a pivotal role in unleashing the power of networks to enable sustainable digital transformation in society.

That's why we've updated our company and technology strategy with a renewed focus on unleashing the exponential potential of networks and pioneering a future where networks meet the cloud. Our goal is to amplify the opportunities for sustainable digital transformation, and we believe that networks are the key to achieving this.

To signal this ambitious new direction and to redefine how our customers and partners see us, we've refreshed our brand to reflect our position as a B2B technology innovation leader. Our renewed brand represents our commitment to sustained longterm growth, enabled by a bold and ambitious vision for the future.

We're excited to be on this journey, and we're excited to share our

renewed brand with the world, as we are by the positive feedback we have received so far from our customers, partners and Nokia employees around the world as well.

Could you tell us more about your brand strategy and accompanying visual identity?

Our brand strategy is all about transformation and growth, and we're excited to share our four key objectives with you. First and foremost, we aim to shift market perceptions to become known as an enabler of software, technology and connectivity gains. We want to be the value-added partner of choice for CSPs, and our brand refresh will be the perfect opportunity to showcase the exceptional experiences we deliver.

Secondly, we want to amplify our visibility and demonstrate the pivotal role we play as a technology partner driving growth and digital transformation across every industry. Our brand activation will reposition Nokia as a partner of choice in



Nokia's brand refresh defines who we are today and where we're headed in the future







We also introduce "the power of n" that represents the transformative power of Nokia's solutions



enterprise and inspire customers to take a fresh look at the innovative solutions we offer.

At the same time, we want to showcase Nokia as an inspiring place to work, one where an open, fearless and empowered culture thrives. Our new purpose and culture have attracted some of the best talent in the industry, and we want to continue to attract and retain exceptional individuals who share our passion for technology.

But that's not all — we're also excited to share our new visual identity with you. It's emblematic of an energized, dynamic and modern Nokia. Our new logo is a visual representation of our purpose and belief in collaboration. It features five abstract letters that work together seamlessly to read Nokia. This symbolizes our commitment to partnering with our customers and partners to deliver our shared vision.

In addition to our refreshed visual identity, we're also introducing "the power of n" to the world. The 'n' stands for the exponential potential of networks, and it represents the transformative power of Nokia's pioneering network solutions. We believe that our networks have the power to change the way we all live and work, and we're excited to share this vision.

Could you elaborate on your updated company strategy and why you think Nokia is in a unique position to increase access to connectivity and accelerate digitalization in the Middle East and Africa?

Our brand renewal is fully aligned with our long-term growth strategy, focused on three pillars: growing market share with service providers,



ESG Strategy with five focus areas

expanding the share of enterprises within our customer mix and implementing new business models.

In terms of growing market share with service providers, we have recently made deals with MTN in South Africa to modernize their existing radio network and expand their 5G radio network, as well as with Zain in Jordan to modernize the entire radio network and deploy nationwide 5G. Nokia has been selected by Liquid Intelligent Technologies to lay down a 10,000-km multi-terabit pan-African optical backbone to enable highspeed internet connectivity and digital services across the continent.

To increase the proportion of enterprise customers, we are developing a worldclass portfolio that includes private LTE networks, Software, IP and Optics dedicated solutions for various sectors, such as utilities, energy, public safety, health and mining. For instance, Nokia has collaborated with Nedaa, Dubai's sole public safety operator, to provide exceptional end-to-end public safety wireless networks. Furthermore, we have been selected by port operators across the region to facilitate the automation of terminal operations.

We are also introducing new business models such as Service Provider as a Partner (SPaaP) and Software as a Service (SaaS). Nokia has many SPaaP references in MEA, including a recent partnership with Orange Egypt and ACUD to provide its cloud-native, AI-powered Nokia AVA platform to support the development of a smart capital city in Egypt. Nokia has also been selected by Airtel across Africa to provide its cloud-native Nokia iSIM solution in a SaaS delivery model.

How important is the Environmental, Social and Governance (ESG) aspect to the company's strategic vision and transformation?

Nokia is committed to transforming its business through a comprehensive strategy that includes developing Environmental, Social and Governance (ESG) practices into a competitive advantage and becoming the "trusted provider of choice" in the industry.

Sustainability is a core component of Nokia's business and technology strategies. In fact, we see sustainability and digital transformation as two sides of the same coin. Nokia's People & Planet 2022 report outlines our performance relating to our ESG strategy and focuses on five strategic areas: Environment; Industrial Digitalization; Security & Privacy; Bridging the Digital Divide; and Responsible Business. By prioritizing these areas, we aim to maximize our impact on the issues



that matter most to our company and stakeholders.

Nokia is also proud to be recognized as one of the Most Ethical companies for several years in a row. We place a high value on ethics and compliance practices, and in 2023, we were honored to be one of the two winners in the telecommunications industry recognized by Ethisphere for our strong business ethics, governance and sustainability practices.

Our ESG strategy is integral to the technology and business decisions we make, and we are committed to driving positive change through our operations.

Can you provide information about the ESG initiatives and partnerships that Nokia has been supporting in the region?

Since deploying the first telegraph line in South Africa in the 1860s, Nokia has been a major player in the Middle East and Africa market. We take pride in our contributions to the region's socio-economic development, but we recognize that there's still more work to be done. In addition to our ongoing efforts to increase connectivity and local innovation and accelerate digitalization in industries and societies, we are proud to support ESG initiatives through strategic Our ESG strategy is integral to the technology and business decisions we make



partnerships with organizations such as UNICEF, UN Women and Forge Academy.

Our partnership with UN Women aims to promote inclusion and diversity in the Middle East and Africa. We've developed training programs and activities to increase women's representation in the ICT sector, reduce the gender gap in access to technology and drive social and economic growth in the region. Specific projects include increasing the number of women employees at Nokia in Saudi Arabia, raising awareness of cervical cancer and uterine fibroids in Tanzania, promoting STEM education in Kenya and empowering the survivors of gender-based violence in South Africa.

Another partnership we're excited about is with UNICEF and Orange Foundation, through which we launched "UPSHIFT" in Morocco.

This initiative aims to empower young people with digital skills, providing training in entrepreneurship, digital literacy and cybersecurity. Our goal is to bridge the digital divide and support youth in developing their own startups. The project is expected to reach over 6,000 young people in the country, particularly those living in underserved areas.

In South Africa, we're collaborating with Forge Academy on the 5G Futures Lab. This lab enables the development, testing and demonstration of potential 5G use cases, as well as offering 5G certification training with Nokia as a partner. We're excited about the potential for this lab to help students adopt fourth industrial revolution technologies like AI, robotics and augmented reality and prepare them for the careers of the future through 5G training certification programs.

Finally, as a global B2B technology innovation leader, how do you prepare for the future?

We have crafted our technology vision to align with emerging trends and future possibilities for our customers,



New capabilities that need to be evolved

projecting ahead to the year 2030. Drawing on input from business units and across our company, we have developed a specific technology strategy that outlines our plans and actionable steps for realizing our vision.

Our Technology Vision 2030 envisions a network that transforms to meet the technological, socioeconomic and geopolitical demands of the future. Our technology vision identifies nine areas where we believe network capabilities will need to evolve to fulfill the needs anticipated in 2030. From human augmentation to digitalphysical fusion, our network will play a critical role in the metaverse and multi-party value ecosystems, delivering innovation around new network paradigms.

Heightened sensing capabilities and context-awareness will enable dynamic and automatic adaptation of connectivity to meet user needs. The network will be 100% cloud-native, supporting a distributed architecture, openness through developer-friendly APIs, and zero-touch management and orchestration achieved through AI/ML-driven intent-based autonomy. Security and energy efficiency will be core requirements in all aspects of the network.

In addition to our core CSP customers. Nokia sees additional opportunities to work with new customers and partners in enterprise markets, who require the power of networks to operate in today's digital era. Digitalization is essential for improving efficiency, flexibility, productivity and sustainably, and networks are fundamental to this transformation. Nokia's best-ofbreed portfolio across fixed, mobile and cloud networking technologies, resulting from constant innovation from Nokia Bell Labs, uniquely positions us for success.

Using consumability, software and AI as pillars, Nokia is pushing the boundaries of our transformational technologies into the future. We're building expert networks for everyone, not just the experts. These are the technologies that will transform and help our world act together, and we are devoting all our attention and resources to making it happen.



stc Kuwait: Building an Advanced Ecosystem to Drive the Customer Experience

stc has been continuously evolving its capabilities through innovation and the use of new technologies, and they aim to maintain this momentum throughout 2023. In an exclusive interview with stc Kuwait CTO, Eng. Fahad Abdul Rahman Al Ali, he shared details on the company's latest developments and how the telco can attain its technological needs in the coming years, among other insights.

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an you tell us more about how stc Kuwait has benefited from 5.5G trials in terms of three-carrier aggregation (3CC

CA) and the 5.5G passive IoT? stc aims to continuously develop its 5G infrastructure with cuttingedge 5.5G trials that demonstrate its ability to enable state-of-the-art ICT solutions in the Kuwait market. The Company aspires to bring next-generation 5G benefits to end customers, allowing them to enable their digital transformation strategies in line with Kuwait's 2035 Vision.

5.5G three-carrier component aggregation (5.5G 3CC CA) offers increased spectrum efficiency and a higher performance experience for more people, machines and advanced digital applications to access the network with an ultra-fast singleconnection peak rate of 3.6 Gbps. 5.5G 3CC CA maximizes middleband spectrum coverage by enabling superior digital experiences in harderto-reach areas such as basements, higher floors in buildings and deep indoor areas that would otherwise have weak 5G coverage.

Additionally, the 5.5G network will offer added benefits and solutions to new market segments, including industry innovations for advanced low-cost passive IoT devices. 5.5G connectivity is capable of withstanding and supporting millions of passive sensors at a wide distance of 200 m. We believe that this revolutionary technology will uncover new opportunities within the sector while accelerating competitive digitalization plans within several industries, such as smart manufacturing, enterprise asset inventory, retail, medical, logistics, tracking of fast-movement goods and others.

Following the success of its 2022 performance, how will stc Kuwait continue to bring next-generation experiences to customers? In 2022, we built the first converged core network and extended our

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nationwide 5G dual-band network reach to provide higher speeds and better coverage across the State of Kuwait. We placed our efforts on revolutionizing the customer experience by adding new innovative services that extend beyond traditional communications. This allowed us to obtain higher speeds, less latency, extensive connections, the adoption of new smart products, higher efficiency and deeper integrations into advanced technologies.

We are continuously working to improve the experience of our customers by helping them incorporate efficient, reliable and secure network slicing into their transformation strategy, enabling them to scale their services massively and add new innovative applications. Our Company plans to innovate and evolve our capabilities in various ICT domains, providing further innovations on top of our 5.5G initiatives. This will allow consumers and industries to benefit from a highly immersive experience and unlock the potential of futuristic opportunities in 5.5G diversified service scenarios.

What are the innovative steps that stc Kuwait will take in 2023 to achieve its goals?

As mentioned earlier, stc has been continuously evolving its capabilities through innovation and the use of new technologies, and we aim to maintain this momentum throughout 2023. To this end, we are embarking on several initiatives. One such initiative is to re-purpose our 2G and 3G networks to efficiently manage our spectrum bands, allowing us to meet the growing demand for 4G and 5G services. Additionally, we are exploring the possibilities of expanding our 5G NSA/SA digital network performance by adding the 5.5G spectrum band. This expansion will enable us to realize full-service capabilities covering consumer, home and enterprise scenarios.

Moreover, stc plans to undertake multiple 5.5G initiatives to foster digitalization opportunities, including achieving global gigabit mobile networks, speeding up network automation, building intelligent cloud networks and providing networkas-a-service platforms. Our goal is to support the agile monetization of digital services and accelerate the exploration of innovative technology scenarios for different 5.5G applications. We will continue to exchange views and information with local and global ICT players, building an advanced ecosystem to drive and shape 5.5G digital services to support the digital transformation plans of local industries in the State of Kuwait.

As chief technology officer (CTO), how do you see stc Kuwait best attaining its technological needs?

As you may be aware, the technological world is evolving rapidly. and telecom operators are no longer limited to providing only connectivity services. Instead, they are expected to offer a full suite of digital services to both consumers and enterprises. This trend places a significant amount of pressure on operators such as stc, and we understand the importance of keeping up with the diverse needs of our growing customer base. To achieve this, we work alongside our technology vendors to stay informed and aware of the latest technological breakthroughs in the industry. Over the past few years, stc has demonstrated its commitment to innovation by being the first in the region to test and commercially launch multiple advanced services in the 5G domain. We have also been closely collaborating with industry leaders to maximize the technical innovations and capabilities of 5.5G, ensuring that new digital services and use-case scenarios are properly supported.

Given that global cyberattacks increased by 38% in 2022, how is the company evolving its cybersecurity approach in order to combat these threats?

stc's cyber security strategy is continuously being developed and updated to keep pace with the latest risks and threats in cyberspace. Our commitment extends beyond implementing all the standards of the national strategy for cybersecurity in the State of Kuwait and its appendices and updates. We go further and adopt additional protection levels aligned with international standards.

We strive to provide valued customers with the latest technologies while ensuring their necessary protection against cyber-attacks at both technical and organizational levels. For instance, we protect 5G data services and the Internet of Things by adopting and implementing the highest internationally approved cyber security standards and technologies, including artificial intelligence and machine learning technology-based systems. Moreover, we monitor and respond to any events around the clock, which has led to our high success rate in overcoming the evolving cyber threats and challenges presented today.



stc Kuwait plans to innovate and evolve capabilities in various ICT domains, providing further innovations on top of 5.5G initiatives





GSMA Open Gateway. Mapping the Scale, Significance and Strong Business Case It Offers

As we look closer at the global telecom industry and how it aims to monetize network investments and effectively overcome any future challenges, the GSMA's Open Gateway Initiative has garnered much global attention with the support of 21 MNOs, representing a significant shift in telcos' design and delivery services. In this article, **e& enterprise** explores the impact of the GSMA Open Gateway, how it enables new business models and the scale at which it is being implemented by industry leaders, demonstrating the strong business case it offers.



he GSMA Open Gateway is essentially a game-changer, allowing direct interaction between applications and the network through APIs while enhancing communication performance. With the GSMA Open Gateway, service providers can reach a wider audience and offer services to subscribers of different mobile networks without integrating each network individually. At the same time, mobile operators can offer their subscribers a broader range of services, thus increasing customer satisfaction and loyalty.

The GSMA Open Gateway initiative launched with eight universal network APIs, including SIM Swap, QoD, Device Status (Connected or Roaming Status), Number Verify, Edge Site Selection and Routing, Number Verification (SMS 2FA), Carrier Billing - Check Out and Device Location (Verify Location).

This profoundly changes how our industry designs and delivers digital services. To put it into numbers, the Initiative will provide access to 3.9 billion users with eight universal network APIs (and more to come) with the support of 21 key operators. These 21 operators are responsible for 45% of the world's mobile connections. This means faster innovation, a wider global reach, improved services, better access to enriched network functionalities, simplified multi-network global deployments and single points of access to multiple MNO network capabilities. We can foresee this bolstering growth and development of new services in key industries such as fintech, Gaming, Web3, digital identity and smart mobility.

A lot of this is already in motion as key industry players, such as AT&T, China Mobile, KDDI, Orange, Telefonica, Verizon and Vodafone, throw their weight behind the Initiative. Currently, GSMA has an Early Adopter Programme for developers as it promotes the uptake of its APIs. In addition to that, big tech players, including Microsoft, Google Cloud and AWS, are working to showcase their real-world use cases. At the same time, operators like Telefonica have already leapfrogged ahead by validating the integration of their network APIs with the Pilot AWS Wavelength Zone in collaboration with AWS to provide developers with the ability to combine AWS edge services with quality on-demand (QoD) specialized services from Telefónica, showcasing an example of new business models that can be developed.

While this Initiative opens doors to developers to create premium services, what we foresee at e& enterprise is the opportunity to create new business models. The business and commercial models that can be enabled are crucial, and it's important for operators to clearly define these at the very onset to ensure that the APIs integrated deliver sustained success and engagement.

One example of a new business model enabled by the GSMA Open Gateway is the provision of Machineto-Machine (M2M) services. M2M services allow devices to communicate with each other over a mobile network, enabling a range of applications such as smart homes. connected cars, and industrial automation. By sharing their network infrastructure through the Open Gateway, mobile operators can offer M2M connectivity to third-party service providers, who can develop innovative new applications and services.



While this Initiative opens doors to developers to create premium services, what we foresee at e& enterprise is the opportunity to create new business models





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This Initiative offers a robust and flexible platform that can support a variety of use cases for mobile operators, enterprises and developers

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Another example is digital payments. By sharing their network infrastructure, mobile operators can enable third-party service providers to offer mobile money services, creating new revenue streams and increasing financial inclusion for consumers.

Finally, the exposure of advanced 5G functionality through common application programming interfaces will leverage new ways to monetise 5G and quickly deliver new services on a global scale with speed. It can be used to develop and test new 5G applications and services, leveraging the capabilities of the 5G network to deliver unique experiences and value to customers.

This is only a tiny fraction of the potential of the Open Gateway, as

it offers a wide range of use cases for mobile operators, enterprises, and developers. Enabling these new business models presents an exciting opportunity for operators and can bring transformative benefits to consumers and enterprises in a way we probably last experienced three decades ago.

However, this isn't the first time an API initiative has been introduced, and there have been several such industry movements in the past with little success. This effort overlaps with other industry API initiatives, such as T-Mobile and Deutsche's T-DevEdge, so skeptics may argue what makes this different. The API space has always been competitive, and just because developers can access network features doesn't guarantee new business models or revenue growth for telcos. The attention and participation this Initiative has garnered from the wider industry, including cloud developers, make it intriguing, and it holds promise for new avenues of opportunity. Moreover, the sentiment around operators this time around has been to strongly focus on meaningful, monetizable APIs that create new business models.

So, if implemented correctly, this Initiative offers a robust and flexible platform that can support a variety of use cases for mobile operators, enterprises, and developers. We will be watching this space very closely to unlock the potential of this new digital ecosystem. Stay tuned.





Tracking Quantum Developments From the Telecom Lens

Quantum technology has the potential to solve problems that are unsolvable by traditional computers. Although at a nascent stage of development, researchers at companies like Google, Microsoft and IBM, among others, are continuously trying to smooth out the complexity associated with quantum mechanics. The World Economic Forum (WEF) indicates that the global investment in quantum tech research and development totaled around \$30 billion in 2022, with countries like China, the US, the UK and Canada leading in funding allocations.

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s we are aware, conventional computers process information in the binary system of zeros and ones. However, quantum

computing uses the qubits system, enabling an exponential increase in computing power by utilizing the principles of superimposition and entanglement. It also uses far less energy than conventional computers.

Quantum and Telecom

Quantum technology is touted to have a significant impact on fields like medicine, finance and cybersecurity, and the telecom sector lies at the center of these ever-dynamic fields. One of the most promising areas of quantum technology is guantum computing, including quantum communication (Qcomm) and quantum sensing (QS), among others. Experts are wasting no time in making the most of the potential of the Qcomm network. Leveraging quantum computing prowess, researchers from the National Institute of Standards and Technology and the University of Maryland developed guantum-enhanced receivers that could address the challenge of efficiently managing growth in internet traffic. according to an article sourced from the American Institute of Physics. The receivers based on quantum properties can significantly increase network performance while reducing the error bit rate (EBR) and energy consumption.

Similarly, in 2022, Britain's BT and the Japanese company Toshiba launched the first commercial trial of a guantum-secured network to protect against encryption vulnerabilities based on the principle of quantum cryptography, which can be used to break conventional encryption keys during data transmissions. Quantum key distribution (QKD) uses photonics the science and technology of light - to transmit the encryption key in fiber networks. When QKD is hacked in transmission, its state is changed, and the attack will be detected in realtime. BT will provide the end-to-end encrypted links over its Openreach private fiber networks, while Toshiba will provide the QKD hardware and key

management software, according to the two companies.

In recent developments, satellite operator SES will be collaborating with its partners to design, develop, launch and operate a satellite-based end-to-end QKD system for testing and validating space-based secure transmission of cryptographic keys.

As more and more organizations move from static operating models to a hybrid world with multiple devices operating in multiple locations, accessing applications in the cloud, and being actively mobile, the challenges of cybersecurity for companies are bound to grow. Cisco's recent Cybersecurity Readiness Index revealed that 15% of organizations globally have the "mature" level of readiness needed to be resilient against today's modern cybersecurity risks. The index has been developed against the backdrop of a post-COVID, hybrid world where users and data must be secured wherever work gets done.

Key cybersecurity players maintain that even though the current quantum computer 1 prototype is unlikely to pose a threat to public key cryptography, it is critical to begin investigating resilient solutions. To that end, Thales, a leading cybersecurity player, created the first real-world application of Post Quantum Cryptography (PQC) in its flagship secure mobile app, "Cryptosmart," leveraging 5G SIM for PQC. For testing, hybrid cryptography (pre- and postquantum crypto) was used in a phone call between two devices to protect the information exchanged during the call. The most common type of encryption, RSA, will become vulnerable once relatively mature quantum computers are available, according to experts.

Another growing area in quantum mechanics is Quantum Sensing (QS). QS is capable of detecting changes in the environment, including temperature, magnetic field and rotation, with a level of accuracy that is unachievable by classical sensors. Such precision results from the sensitivity of quantum states to minor changes in the environment. In telecommunication, QS is advantageous in receiving signals and amplification for radar communication, as well as calibrating electrical standards to support 5G/6G communication. Other fields such as infrastructure monitoring, navigation and environmental monitoring can also benefit immensely from QS.

Challenges

Quantum computing currently faces two main challenges to widespread adoption: the development of hardware capable of supporting quantum computation at scale and the creation of software tools that allow programmers to harness the hardware to solve real-world problems. The creation of satellite networks and the related ground infrastructure needed for QComm also presents many challenges that researchers are still trying to resolve.



Indeed, the future of quantum technology will herald a new chapter in the history of the world





Where Is Quantum Heading?

Indeed, the future of quantum technology will herald a new chapter in the history of the world. However, the overall development and commercialization timelines for QS and QComm products will still depend on the progress of scientific breakthroughs. Researchers are still working on building stable qubits and developing error correction techniques to make QCs more versatile. It is not to say that the progress thus far is a small feat; however, the future of quantum is a compelling storyline for the digital world.

Here in the UAE, Abu Dhabi is building the quantum computer in collaboration with Barcelona-based Qilimanjaro Quantum Tech. Once fully functional, the quantum computer can prove invaluable in diverse fields — from discovering new medicines to designing better batteries — and also help in multiple artificial intelligence applications.

Recent market studies show that the global quantum computing market size is projected to touch \$125 billion by 2030 and likely to reach a CAGR of 36.89% from 2022 to 2030. Quantum computer developers are expanding their presence across the globe to build public-private collaborations with the quantum ecosystem to explore applications and accelerate research, development and education of quantum hardware. For example, it will be interesting to monitor how quantum computing will figure into the standard of traditional data centers in the near future.

Countries like Singapore have made consistent investments in research in quantum technologies for several years, including the formation of three national quantum initiatives: the National Quantum Computing Hub, the National Quantum Fabless Foundry and the National Quantum-Safe Network.

"The fabric of computation is changing, and quantum computing is the harbinger of that change. It promises to address the challenges that cannot be solved using current computation techniques and empowers us to re-imagine customer experience and move towards a sustainable future at a time when energy requirements have become unsustainable, says Nikhil Malhotra, global head, Makers Lab, Tech Mahindra, a company that is focused on expanding its guantum offerings.



The global investment in quantum tech research and development totaled around \$30 billion in 2022, with countries like China, the US, the UK and Canada leading in funding allocations





Rethinking Charging in the 5G Era

Communications service providers (CSPs) have a chance to play a central role in the development of new thinking around the way goods and services are made and distributed. For most of their existence, CSPs have played the role of utilities, mostly selling connectivity and finding different ways to monetize it. However, in the 5G and digital era, the monetization strategy must change to one that focuses on quality of service (QoS) and experiences, where partnerships will be critical.

G will also unlock new revenue opportunities for B2C, B2B and B2B2X scenarios and support a wide range of SLAbased monetization. This could include being able to charge for services based on any attribute, such as device type, latency or throughput. But to do this, CSPs will need new charging engines that go beyond the flat-rate business models of the past.

By embracing 5G convergent charging solutions, CSPs can gain the true value of standalone 5G. Converged charging needs to become dynamic and flexible to incorporate all of the new variables from next-generation services while maintaining transparency, precision and simplicity. This telco-grade accuracy is essential for fostering trust across the value chain and making multi-party business cases a practical reality.

But how is charging for 5G different than for previous networks, and what will CSPs need to monetize partner ecosystems in the 5G era? The following is a checklist of what we think are the key criteria for the future success of 5G charging:

1. Monetize every 5G attribute

In the growing area of 5G network slicing, telcos should have the flexibility to apply slice-specific charging by device type or by session quality (based on QoS information or SLA). And this should extend to access-based fees — one-time charges for registrations in a specific network slice. Also, to enable new 5G use cases, the convergent charging system (CCS) should have the ability to interact with multiple 5G network functions — AMF, NEF and NWDAF — and evolving functions not yet specified by 3GPP.

2. Require little or no customization

The promise of 5G lies in its ability to transform multiple verticals and support new ones. For telcos to grasp these opportunities, they need to be flexible. They cannot rely on the dedicated development and heavy customization of traditional online charging systems. Instead, they should build CCSs that are truly adaptable. That demands a system with intuitive GUI-based, no-code configuration.

3. Charge for new units of value

If the future is all about quality of service, then telcos must consider what they are charging for. The megabyte may have been right for the 3G and 4G eras, but 5G demands a more imaginative approach. Consider the example of HD video streaming or cloud gaming. Here, it might be more appropriate to charge by the length of the session rather than by the data consumed. What's more, CSPs must be able to extend this charging capability to their B2B partners.

4. Support low-latency edge use cases

Low latency at the edge is the 'superpower' of standalone 5G. It will be the factor that makes possible the most advanced new industries where lag cannot be tolerated - autonomous driving and telehealth, for example. With this in mind, the mobile industry developed the Ultra-Reliable Low Latency Communications (URLLC) standard. When it comes to charging, CSPs must distribute their URLLC system capabilities to the edge. This way, they can identify discrepancies and take action to meet guaranteed service levels. In addition to that, in the context of edge-based services, charging has to not only cover telecom network usage but also extend to adjacent services. Take, for example, a service that contains elements of network consumption alongside mobile edge compute utilization. Subsequent charging for that service must clearly and accurately reflect both the network usage and the compute resource consumption.

5. Turn charging itself into a profit center

If a charging system has the power to unlock new revenue opportunities, it follows that it can become an asset in itself. Forward-thinking CSPs are already looking at how to turn their platforms into profit centers. By developing charging-as-a-service, they can generate new revenue from a multitude of partners.

6. Respond in real time to changes

Flexibility is one of the great benefits of 5G convergent charging solutions. A legacy system might provide some smart capabilities, but with cloudnative online charging, the analytical intelligence is baked in. This makes a huge difference. It lets the CSP monitor supply and demand, anticipate changes in customer behavior, optimize available hardware resources and price dynamically.

A new era characterized by flexible and dynamic systems is coming. CSPs that invest in 5G convergent charging solutions now will receive a return on their investment many times over. And they might even play a central role in a 21st-century industrial revolution.

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



In the context of edge-based services, charging has to not only cover telecom network usage but also extend to adjacent services



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Al Opens a New Paradigm and Opportunities for Businesses in the UAE

In an exclusive interview with du Chief ICT Officer (Acting) Jasim Al Awadi, he shed light on the industry-first ChatGPT showcase held during an exclusive padel tournament recently attended by dignitaries and government representatives.

ecently, du's ChatGPT showcase featured unique use cases. What are the key advantages of

using Al?

Al is an intriguing field of study and development, in my opinion. In the coming years, Al will usher in an entirely new paradigm for businesses and how things will be conducted. We are only beginning to feel the power of this technology, and with all the advancements we're observing, I'm certain that Al will become even more powerful, and we'll be able to utilize it more and more. We can already see how powerful Al tool [ChatGPT] is based on what we know today.

One of the highlights is the commentator, Khalid, an avatar initiated by GPT. How did this work, and what were the challenges you encountered?

We have utilized artificial intelligence in one of the padel tournaments. Here is where we activated Khalid, the ChatGPT commentator, with impressive results. Since it was the first use case we implemented in a live environment, it was a bit challenging, but thanks to our partners, particularly Microsoft, and all the teams involved in making this project a reality, it was a success.

When we announced the padel tournament, AI and ChatGPT dominated the market conversation. And as members of this industry at the forefront of new technology, we wondered, "How can we incorporate AI into the narrative?" During a session of ideation, someone suggested using it as a commentator. We thought it would be difficult, but with everyone's help, we were able to accomplish it. We created Khalid, an AI-powered avatar with the name, appearance, and personality of an Emirati commentator.

The first obstacle we faced was that the AI ChatGPT is still relatively new and lacks a large number of culturally relevant elements. It took time, but the team was able to create the appropriate look and feel for the commentator. The other difficulty was incorporating the commentator into a live game. The team began providing Khalid with all the available raw data, and he began commenting on the game. Surprisingly, he also made accurate predictions about the game's outcome.

This is the beauty of artificial intelligence. The more data you feed it, the smarter and more powerful it becomes. And we felt this throughout the tournament. Despite the initial tournament's limited scope, this demonstrates the potential for massive implementation of our use cases.

How can du continue to leverage Al platform capabilities to better enhance interactive experiences and services for B2B customers?

As a result of the tournament, where we were able to put a theory into practise, a large number of people became interested, and we began conducting Proofs of Concept with clients. There are numerous applications for AI, including chatbots and call centers. AI can assist us by eliminating numerous unnecessary processes and enhancing the customer experience. And currently, there are several internal projects within our organization that we wish to empower in relation to our customers. This is how we foresee AI evolving and enhancing our business capabilities: by empowering a substantial portion of our daily activities.

As it is coming more to "life" each day, how is Generative AI (ChatGPT) set to boost du's efforts in line with the UAE's goal of becoming a leader in tech innovation?

Our presence in the UAE is an enabler. Being in this country and under the guidance of the government and the leadership, we are always at the forefront of new technology research. In other nations, we observe a great deal of opposition to Artificial Intelligence, but in the UAE, we have embraced it. Certainly, every new technology will have both advantages and disadvantages. It is up to us, as humans, to determine the direction and purpose of this technology. If you use it for the intended purpose, you will achieve the desired outcome, and vice versa.

I believe that from the beginning, we embraced technology and considered how to use it for the benefit of both our organization and our clients. And ultimately, it will be to the benefit of the nation, as we are all interconnected in an ecosystem. As Al empowers us more, I am certain that we will explore a new paradigm for digital transformation. Currently, I believe we are only exploring a small fraction of the internet's and Al's potential through the apps we use and how we interact with the web. Imagine: once we achieve full AI empowerment, everything will change drastically, and it will be extremely difficult to predict the future due to the rapid technological development.



As AI empowers us more, I am certain that we will explore a new paradigm for digital transformation



TDRA Announces 'We the UAE 2031' Vision



The Telecommunications and Digital Government Regulatory Authority (TDRA) has announced transformation projects under the auspices of the "We the UAE 2031" vision, which constitutes a new envisioning and execution of a national action plan through which the UAE will continue its development journey and enter the first decade of the next fifty years.

The 3 transformation projects with an important strategic impact include the Digital Vault within the banking, insurance and telecommunication sectors; the Children's Communication Services Program; and the Digital Customer Journey Quality Measurement Program.

These projects are in line with the "We the UAE 2031" vision and its

integrated development program for the next ten years, covering social, economic, investment and development aspects, especially within the special directions of the "Forward Ecosystem" pillar, including building the government of the future.

The announced projects also fall within an integrated file of initiatives and programs emanating from the Digital Transformation Strategy with the aim of consolidating the foundations and concepts of a comprehensive and integrated digital life in the UAE while confirming the UAE's global position as a leading and advanced country in the field of digital government and in embracing emerging technologies to serve customers and support applications that contribute to establishing an attractive digital economic environment.

H.E. Eng. Majed Sultan Al Mesmar, TDRA director general, noted, "TDRA transformation projects fall under the general context of the UAE's directions and the vision of its wise leadership, and represent an interpretation of several pillars of "We the UAE 2031" vision, which enhances the UAE's future readiness. We are pleased that the ICT sector is the sector that supports progress in all fields, especially the economic field, through the consolidation of the digital economy, which enhances the UAE's leading position on the global map. In addition, our transformation projects for the current stage are related to economy, youth and the various segments of customers, which constitute the main headlines for creating the desired future."

The Digital Vault project contributes to enabling the telecom, banking, insurance and private sectors to design and provide seamless digital services to customers in a way that enhances the quality of life in the UAE on the grounds of ease, trust and privacy, allowing the sharing of reliable data and documents with the customer's approval. These services are designed in line with the laws and policies of the UAE, including the Electronic Transactions and Trust Services Law and the Personal Data Protection Law.

TRA Grants New VoIP License to Oman Data Park



The Telecommunications Regulatory Authority (TRA) granted a new license to Oman Data Park (ODP) to provide voice or video telecommunication services over Internet protocol (VoIP). This will expand the base of services provided via Internet Protocol in the Sultanate of Oman.

The issuance of the license is based on Oman's Telecommunications Regulatory Law and its executive regulations, issued by the Ministerial decision No. 144/2008. In accordance with this approval, ODP will contribute to enhance benefits of users of the telecommunications sector in the Sultanate of Oman from the technology of voice transmission and sending and receiving phone calls over the Internet Protocol (VoIP).

The new technology works by digitally transmitting information via a high-speed Internet connection by converting audio signals from the phone to a digital one via the Internet, based on what is known as packet switching technology (PST).

Commenting on this latest development, Eng. Maqbool Al-Wahaibi, CEO of Oman Data Park, said, "Obtaining of this license confirms our company's readiness to provide advanced services at a time when the Sultanate of Oman is keen to keep abreast of the latest developments and take advantage of all the latest Internet protocol technologies."

Explaining further, he stated "Oman Data Park's capabilities in providing UCaaS service, which relies on voice and video communications over Internet Protocol (VoIP) in cooperation with Cisco, and its Nebula-Collaboration service, makes it more capable in dealing with customers of big data that require VoIP, PBX and video conferencing systems by adopting a flexible approach."

It is noteworthy that ODP, the Sultanate's first managed cloud services provider and cyber security, plays an integral role in supporting the digital transformation of Oman, through their offering of an all-in-one solution of cloud computing, data storage, networking, web hosting and network security services.

The State of UAE's Mobile and Fixed Networks in Q1 2023



Ookla's Q1 2023 Internet Performance Report revealed the state of the UAE's mobile and fixed networks, based on data from Speedtest.

During Q1 2023, in terms of mobile, the UAE ranked first globally with a median download speed of 178.25 Mbps and a median upload speed of 22.84 Mbps, as well as a latency of 20 ms.

Ookla's Speedtest Intelligence reveals that among the operators in the UAE in Q1 2023, Etisalat delivered the fastest median download speed at 184.58 Mbps as well as the lowest median multi-server latency in the country at 35 ms. When it comes to 5G performance, Etisalat recorded the fastest median 5G download speed at 672.04 Mbps.

Despite that, du emerged as having the highest consistency of performance in the United Arab Emirates during Q1 2023, with 94.6% of results showing at least a minimum of 5 Mbps download and 1 Mbps upload speeds.

On the other hand, the UAE increased its global ranking to second place for

fixed broadband. From 5th place in February 2023 with a median download speed of 219.47 Mbps and a median upload speed of 102.2 Mbps, the UAE rose by three spots in March 2023.

In retrospect, this is a huge boost, as in 2021, the UAE was among just the top 20 in fixed broadband speeds globally.

By the end of Q1 2023, the UAE's median download speed is at 221.87 Mbps, and the median upload speed is at 103.43 Mbps, with a latency of 5 ms.

Ookla's Speedtest Intelligence reveals that among top fixed broadband providers, Etisalat delivered the fastest median download speed at 255.01 Mbps during the first quarter of the year, but du registered the lowest median multi-server latency at 12 ms.

In contrast to the mobile network's results, Etisalat had the highest consistency in fixed broadband at 90.2%, showing at least a 25 Mbps minimum download speed and a 3 Mbps minimum upload speed.

Bahrain Government Transferred 85% of Data to AWS in 2022



According to Bahrain's Information & eGovernment Authority (iGA), the country made achievements in the Operations and Governance sector in 2022, in line with the aspirations of its national goals and strategies.

Regarding the government sector's cloud infrastructure, iGA Chief Executive Mohammed Al-Qaed noted that about 85% of government data has been transferred to the Amazon Web Services (AWS) platform as part of its extensive data backup system. In terms of IT governance, Al-Qaed stated that in 2022, iGA reviewed around 3,714 government requests through the National Committee for ICT Governance, with a completion rate of 3.7 days per request.

A 24% cost reduction rate has also been achieved through the government's IT purchase optimization, which involved BHD 22 million worth of purchases to more than 50 government entities last year.

Moreover, Bahrain's Operations and Governance sector made efforts to activate digital policies by developing IT policies and standards as well as signing agreements with Batelco, Amazon and Cisco.

On the business continuity side, Al-Qaed confirmed that the Operations and Governance sector has been able to provide more than 80 monitoring systems and over 650 enhanced devices for monitoring the government network around the clock.

As a result of this, more than 2,263 technical issues have been addressed and resolved, with an improved performance of 25% within monitoring systems.

By enhancing the connectivity to the Government Data Network (GDN), more than 300 websites have been connected, while the speed of the Internet has also been raised. An update of the domain (.gov. bh) system framework was also completed, as was the linking of government data centers with Cisco to improve the speed of hosting systems. This is in addition to the GCC network being linked to systems in the UAE and Kuwait through the Zajel network.



Satellite and Private 5G: Powering Data Processing to the Edge

More than 85% of organizations will embrace a cloud-first policy by 2025, according to the consensus of analysts. With the cloud as the centerpiece of digital workloads, the world becomes ever more data-driven, with large volumes of raw data generated from every industry vertical and digital interaction.

he storage, movement and processing of this data must be facilitated efficiently to maximize speed and reduce both latency and cost. This is where edge computing becomes critical: to manage and extract value.

With edge, workloads are placed as close as possible to the data source, thus addressing the problems of backhauling and avoiding delays and service disruptions. Thanks to the edge, the backhauling of large amounts of raw data processed in the main data center can be slashed.

Beyond processing workloads, edge computing can be used to host various applications, leveraging the benefits of software-defined networks (SDN) and network function virtualization infrastructure (NFVi). Edge computing technology is gaining more traction in the Middle East as organizations look to optimize their operations and improve the customer experience while governments commit to building and transforming smart cities.

Satellite: A Fundamental Edge Device

As satellite and cloud service providers strengthen their collaboration, edge solutions are emerging as a powerful enabler for satellite networks — from the terminal on the ground to the orbit.

Exploring potential use cases that arise from combining satellite connectivity with cloud and edge computing resources, in March 2023, Amazon Web Services (AWS) signed an agreement with LEO satellite internet provider OneWeb.

By developing a satellite constellation management solution-as-a-service, it will bring business continuity, the virtualization of mission operations and space data analytics, as well as user terminal and edge integration.

In November 2022, AWS's first-of-itskind space experiment successfully



ran a suite of AWS compute and machine learning (ML) software on a low-Earth orbit (LEO) satellite for a faster, more efficient method to collect and analyze valuable data.

In this context, SES offered that a cloud-optimized and edge-aware satellite connectivity partner can provide a level of agility anywhere with a network that is flexible enough to allocate bandwidth and QoS capabilities based on workload demand. This can ensure expansive coverage in any location.

The value of applying computation power at the network edge can unlock the potential of multi-orbit constellations, proliferated LEO and high-throughput satellites.

In many ways, a satellite is a fundamental edge device, as it works remotely (often disconnected from a data center) and generates loads of data. Transforming it to function as an edge device will reduce latency, increase security and lower transport costs. With less data processing time, space edge-hosted payloads avoid multiple round trips to an Earth station or terrestrial-based cloud. In the ground segment, satellite terminal stations work alongside the satellite network edge.

Digital ground service providers are similarly extending virtual cloud environments so that satcom services can function as nodes in a broader communications network. As a result, workflows and functions within a satellite-operating environment are now being virtualized and migrated into edge cloud environments.

The goal of cloud-native functions is to break up the boundaries between verticals, such as between the satellite and telecom industries. Satellites can connect with other satellites nearby to form a distributed processing platform, bringing in more flexibility on the edge.

On the R&D scene, the research teams of Professor Jeongho Kwak and Professor Jihwan Choi have

developed new edge-computing offloading and network-slicing techniques that can be used in nextgeneration LEO satellite network systems.

An LEO satellite network can provide stable internet services using satellites that orbit 300–1500 km from Earth, making it ideal for building communication networks in locations with fewer base stations and low population density.

The university-led researchers proposed a different approach to applying edge computing to LEO satellites: a network slicing technique that harnesses the distribution and movement characteristics of LEO satellites and the characteristics of wireless environments in several virtualized services.

Multinational companies and startups around the world are positioning themselves to meet the inevitable demand for enhanced space-based edge processing, beginning onboard satellites and extending to data centers in Earth and lunar orbit.

The demand for satellite edge data processing is anticipated to climb as more terrestrial applications constantly require additional memory and processing speed.

Private 5G and Edge: A New Use Case Enabler

Creating a more seamless, secure and interconnected society is made possible by combining private 5G and edge computing. It is indeed true that the demand for private 5G and edge-related services is expected to skyrocket in the coming years.

As 5G, digital and edge computing converge, these technologies will improve customer experiences by enabling next-gen applications to be more responsive and efficient. This is in line with more compelling and evolving use cases across verticals like manufacturing, healthcare, utilities and automotive.

Deploying reliable, secure and scalable private 5G networks and

merging them with edge computing capabilities can better support the evolving needs of customers and end users today, generate incremental revenue, eliminate redundancies and produce operational cost savings for enterprises over time.

Enterprises will need to put a DevOps operating model in place to ensure success and go-to-market velocity and to maximize their chances of achieving success and the necessary ROI in this scenario.

Edge computing can be made more powerful and versatile with private 5G. Combining the high speed and low latency of 5G with the processing power of edge computing allows businesses to analyze situations in real time while having control over data sovereignty, ownership and location. Moreover, private 5G can protect data by ensuring that all traffic runs within a dedicated local onpremise network.

Vodafone delivers new possibilities for next-generation businesses through Mobile Private Networks (MPNs) and multi-access edge computing (MEC). Unlocking even more potential from the network edge, the combined solution delivers secure connectivity and powerful computing in real time.

In January 2023, etisalat by e&, in collaboration with Huawei, successfully deployed and tested its 5G Portable Private Network MEC functionality.

This successful showcase is part of the 5G SA and MEC commercialization program and enables etisalat by e& to offer a 5G-based replacement for traditional VPN, enhancing the remote work experience for UAE enterprises. By being accessible and convenient, a 5G Portable Private Network solution accelerates data delivery and boosts security for services. This is done via seamless switching between public and private networks.

Prior to that, in 2022, etisalat by e& and Huawei also successfully tested a 5G Edge Computing platform aimed at serving customers' digitalfirst lifestyles, which demand the development of quicker and more intelligent cloud technologies as well as swift automation.

Nokia has also signed a deal with etisalat by e& to deploy 5G private networks for enterprises in Abu Dhabi. The pair will offer a variety of solutions, including MEC, Modular Private Wireless (MPW) and Nokia Digital Automation Cloud (DAC), to meet the diverse needs of various enterprises.

Additionally, through its collaboration with du, Digital DEWA's InfraX is the first in the region to offer the utility industry private 5G slicing driven via edge computing. Under this initiative, du will build DEWA's new mobile core edge infrastructure through the NFVi solution, which provides separation and independent scaling of control and user planes.

> The world becomes ever more data-driven, with large volumes of raw data generated from every industry vertical and digital interaction





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Telecom Review Virtual Panel: The ongoing hardships of the Telecom and ICT sector in Lebanon

Exploring the ongoing hardships of the telecom and ICT sectors in Lebanon, Telecom Review successfully hosted the virtual panel, "The Telecom Sector in Lebanon: From Pioneering to Collapse," which covered the continuing implications of the crisis for customers as well as the challenges faced by businesses and the sector as a whole.

n his welcome note, Mr. Toni Eid, Trace Media CEO and founder of Telecom Review Group, pointed out the serious issues faced by the Telecommunications sector, including economic collapse, and mentioned that no country can operate without a proper ICT infrastructure.

The Minister of Telecommunications of Lebanon, Engineer Johnny Corm, discussed Lebanon's current telecom status and the challenges faced by the sector. The telecom industry has been facing numerous financial as well as other challenges, including the amendment of Budget Law 36 (that has prevented CAPEX payments since 2019), Lebanese currency devaluation and the absence of the electrical bridge. The loss of sector talent, or "brain drain," has also been a significant issue. However, despite these challenges — or maybe motivated by them — the telecom sector has been working day and night to avoid collapse. Corm emphasized his firm belief that, because of this commitment, the sector has not yet collapsed and is unlikely to do so.

Telecom Players Pushed Through Crisis, Must Now Call for Major Reforms

Addressing the first question to the panelists, Issam Eid, COO of Telecom Review Group (Levant and Africa) and managing partner of Trace Media Lebanon, inquired about the main reasons for the sharp decline and deterioration of the telecom sector. He asked how they would best describe the current reality that the country is in.

Sharing his perspective, Dr. Imad Hoballah, CEO and chairman of Business Investments and Development Strategies (B.I.D.S.) and former minister of industry, first mentioned the challenges that Lebanon is facing as a whole: political instability, corruption, economic crisis, currency TELECOM Review virtual panels

THE TELECOM SECTOR IN LEBANON FROM PIONEERING TO COLLAPSE



WELCOME NOTE

Toni Eld, CEO Trace Media Intl. and Founder Telecom Review Group



OPENING Johnny Corm, H.E. Minister of

H.E Minister of Telecommunications

Salem Itani, Chairman and CEO, touch



Jad Nassif, Chairman and CEO, Alfa

PANELISTS



Imad Kreidieh, Chairman Director General, Ogero

Patrick Farajian, Chairman and CEO, Sodetel



Dr. Imad Hobbalah Chairman and CEO, B.I.D.S. and Former Minister of Industry

MODERATOR Issam Eid, COO, Telecom Revie

Issam Eid, COO, Telecom Review Group (Levant & Africa) Managing Partner, Trace Media Lebanon

devaluation, high level of debt, lack of investments, power interruptions and the decrease in the purchasing power of customers.

In addition, Jad Nassif, CEO and chairman at Alfa shared that they have made "many efforts during the past two to three years" and that, in the long run, they can "change the perception of the customers through consistency and teamwork"; this is especially true with the Ministry's full support. Nassif emphasized the country's improved network performance, based on the latest Ookla Speedtest Global Index. Currently, Lebanon is ranked 68th out of 100 countries in mobile speed, with an average of 31 Mbps, whereas in June 2022, they were in the 103rd position with only a 17 Mbps speed.

Additionally, Salem Itani, CEO and chairman at touch, said that "this whole collapse" has been dealt with

positively and that they "made a lot of solutions that are out of the box." touch can recognize 5G live at a speed of 2 Gbps and an EBITDA margin of more than 50%, which is very good in terms of the current norms.

Privatization of Telecom Sector. Too Soon Now, but Soon to Come

The panel's second question discussed Lebanon's position concerning the allocation or privatization of the telecom sector.



Sodetel, Ogero and Alfa's executives have all agreed that privatization is not possible with the current state of the country's economy. Instead, certain measures must be taken to prepare for it.

Patrick Farajian, CEO and chairman, Sodetel, explained that "most of them are engaged in firefighting mode and looking into the future." Farajian highlighted the fact that, in the current economic situation, they cannot talk about privatization.

On a positive note, he expounded that they do have the tools at hand to start "incremental changes to reform." Looking at the fixed network, as per Law 341, they can first proceed to corporatization before pursuing privatization.

In line with this, Alfa's CEO considers the key to privatization as being a "political decision." On the network level, however, they are ready. Indeed, they are "laying the foundation for 5G — continuously optimizing and shutting down obsolete technology."

For Imad Kreidieh, CEO and chairman, Ogero, despite having "enough expertise and skills in order to manage in the telecom sector, nobody at the political level has the will for the intention and resilience of making it happen." He invited the politicians to "make up their minds" and make "reasonable and mature decisions regarding the telecom sector."

A Third Operator in Lebanon Will Bring Employment Opportunities

On this subject, Imad Kreidieh said that outside the framework of 431 and the third license, Ogero had initiated a project back in late 2017 with the deployment of around 91 fixed wireless access sites dedicated to data, enabled by VOLTE on those 91 sites.

"The operation was extremely successful. The return on investment on those sites happened in less than 24 months. I was hoping that in 2019, before the political and economic collapse, Ogero would be able to expand and deploy an additional 300 sites on fixed wireless access to create and lay down the foundation of the third operator and create competition. Although, I am interested in the data business more than the voice business. We would have created a good platform in order to make sure that inclusion, which is one of the most important pillars of a beneficial public sector," he said.

Adding to the conversation, Dr. Hoballah said that he agreed with Imad Kreidieh's view concerning the political brass and their reluctance or refusal to make decisions that could kickstart a change or a reform in the sector.

The Deterioration of the Lebanese Pound May Cause Lebanese Isolation

"We don't have any choice but to be able to provide the sustainable service. We have the Ministry of Finance, who is in charge of the finances of the Telecommunications sector of MoT and Ogero to be ready to intervene, and it must.... More than 70% of Ogero's financial needs — our international bandwidth, imports for spare parts and licenses to support contracts — are paid in dollars." Imad Kreidieh said.

"I know that the ministry is working on a new decree that will probably take a couple of months before it is validated. We need the government to explicitly put a subsidy for the telecom sector for a temporary period of time, including broadband and fixed telephony. Otherwise, the connectivity environment is at stake and in great danger. If we fail to pay our dues to T1 providers in capacity, I'm afraid there's not much that I can be doing in order to keep Lebanon connected to the rest of the world.

Adding to the conversation, Patrick Farajian opined that tariffs were the key issue today. He said, "In the absence of reform, which would involve the Council of Ministers, tariffs are a key issue, and today's tariffs do not cut it." He added that the pricing of the fixed network for the broadband is based on 1US\$/ 3,900 LBP, which is not sustainable for Ogero — not for the private sector. "You can get a fiber connection at US\$2, which is very low for a country such as Lebanon, which needs investment. If we do not address the tariff issue, we are in big trouble. It should be addressed not only in absolute value but also in the tariff differential between different services."

Where Does Lebanon stand regarding 5G's Deployment?

During this fruitful section, the moderator posed a question to Itani. asking for his perspective on 5G deployment. He responded by stating that touch will have a complete vision and strategy for 5G deployment by the end of 2023. He mentioned that 5G infrastructure requires license preparation as well as software and hardware upgrades, and that touch has already modified their core and IT systems to cater to 5G. He explained that touch's approach to 5G implementation will be different from other operators in the region, as it will be more studied, related to return on investment and based on valid use cases. Itani added that touch will start implementing hotspots by 2024, targeting areas with high traffic and service needs.

Nassif, also tackled this question. He explained that Alfa has partnered with Ericsson, Nokia and Huawei to install 5G testing at 11 live sites at zero cost. However, he believes that the ecosystem in Lebanon is not yet ready for commercial deployment due to the massive effort and budget required.

E-Wallet: A Potential Solution for Lebanese Customers

Moving to the last question about the topic of e-wallet mobile, Itani offered his belief that this could be the solution for the current situation in Lebanon. Transactions today, whether paid in US dollars or Lebanese lira, are done in cash. So the e-wallet will come as a true solution for citizens.

touch's CEO stated that this project should be done through a partnership with the right companies.

From his perspective, Alfa's CEO assumed that the e-wallet is a big part of digitizing customers' experiences and giving them more autonomy while self-managing their services.



Security Requirements and Challenges of 6G Technologies and Their Applications

By 2020, the deployment of fifth-generation (5G) radio networks with assured low latency, extraordinary dependability and mass connectivity had been completed worldwide.

ith that said, 5G won't be able to satisfy all needs after 2030. According

to predictions, sixth-generation (6G) wireless network technology will have better security and more complete spectrum coverage while using less energy. By using novel technologies, including multiple access, waveform design, channel coding methods, network slicing, various antenna technologies and cloud edge computing, 6G networks will be able to meet these demands. Significant future changes are impacted by 6G.

Security Challenges of 6G Applications

Several applications and services have extremely strict security requirements in addition to very demanding performance requirements because of the high communication needs and requirements of 6G applications. When highly-skilled, omnipresent attackers and harmful behavior increase in frequency, the connection between general performance expectations and security must become more complex.

6G Security Architecture

The security architecture for the 6G network has been created to be open. The distinction between inside and outside the network will gradually dissolve because 6G is designed to be a more open network than 5G. Because of this, conventional network security tools like IPsec and firewalls won't be strong enough to keep the network safe from outside attackers. To address this problem, the 6G security architecture should support the fundamental security principle of zero trust (ZT) in the mobile communication network. ZT is a security paradigm that puts the preservation of system resources above everything else. ZT posits that an attacker may dwell within the network and that the network architecture is accessible or untrustworthy from the outside. Regular assessments of this nature are required.

The use of "virtualization security" is based on a system with a secure virtualization layer that includes a security technology that identifies concealed harmful software, such as rootkits.

Additionally, by employing secure protocols like TLS. SSH. VPN and others, the hypervisor must provide complete separation of computation. storage and the network of various network services. A hypervisor capability known as virtual machine introspection (VMI) investigates and identifies security threats by examining the vCPU register data, file IO and communication packets of each virtual machine (VM) in order to stop intrusion. When implementing containerization, the operating system should suitably set the individual containers' privileges and prevent the mounting of essential system directories and direct access to the host device file container.

The most crucial action to take when dealing with open-source security risks is to implement an automated management system to control vulnerabilities brought on by the use, updating and disposal of open sources. This makes an automated management system that can find vulnerabilities and apply patches necessary for the quick identification of threats. Another step is necessary to ensure that the patched software is installed quickly and securely using the secure OTA technique. Furthermore, a security governance framework must be built to deal with (1) the deployment of security solutions, (2) changes in developer perspectives and (3) long-term opensource vulnerabilities.

Also, when it comes to AI data security, AI systems must be open and honest about how they protect their users and the mobile communication system from AML. Building AI models into a reliable system is the initial stage in the process. The AI models operating in user equipment (UE), radio access networks (RAN), and the core must also be checked to see if they have been maliciously updated or otherwise changed by an



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aggressive attack using a means like digital signatures. A system is required to carry out self-healing or recovery activities when a dangerous AI model is discovered.

The Two Most Essential 6G Applications

Uses for Unmanned Aerial Vehicles (UAVs)

Due to the limitations of 5G networks, an autonomous drone system has not yet been fully realized; however, 6G networks may finally achieve the full capabilities of those systems. Concerningly, these systems may also come under cyberattack. The UAV requirements and problems within 6G communications are examined in this subsection in order to support highly secure systems. UAV networks are distinct from other 6G applications because of their unpredictable and dynamic nature. The following UAV specifications and features are highlighted:



- High altitude: UAV systems always fly above the level of base stations and most mobile users. The wireless link between the base station and the UAV is unhindered. Air-ground channels have lower route losses and are therefore less sensitive to scattering than conventional terrestrial channels. Compared to non-Line-of-Sight (NLoS) terrestrial communications, line-of-sight (LoS) channels offer superior dependability and lower route loss for air-ground transmissions.
- High mobility: In traditional communications, nodes are typically positioned in fixed locations. Remotely operated UAVs can fly quickly over three dimensions. There are several different techniques to deploy UAVs to establish wireless connectivity. The value of this capability is greater in emergency situations like military operations and disaster aid.
- Low Energy: Because of their weight and size restrictions, UAVs have a limited amount of energy. UAVs must also simultaneously provide energy for push as well as communication. Hence, compared to conventional energy use, the propulsion energy consumption needed to keep the UAV flying is substantially higher. So as to maximize its lifespan, it needs to be designed with energy efficiency in mind.

Uses for Smart Grid 2.0

Grid networks are evolving from Smart Grid 1.0 to Smart Grid 2.0 as intelligent gadgets and cuttingedge data analytics techniques are created. Smart Grid 2.0 introduces intelligent dynamic pricing, automated smart meter data analysis, line loss analysis and automated distribution management. Smart Grid 2.0 is capable of self-healing and selforganization. It is independent of an outside source of electricity. To ensure privacy, dependability and availability, Smart Grid 2.0 must provide network information and security. Physical attacks, software-related threats, threats to control components, and attacks utilizing artificial intelligence/ machine learning are the most common security flaws.

Key functions and services, including billing, metering and information sharing, as well as control elements (SCADA), data access points and cyber-physical Emergency Management Systems (EMS), are generally vulnerable to these attacks. A trading mechanism's trust management must be continually reviewed and improved for Smart Grid 2.0 to weather these types of threats. As one example, peer-to-peer energy trading is among the key features of Smart Grid 2.0.

A third party should establish the necessary trust with the least amount of invasive involvement due to the nature of these attacks.



How Artificial Intelligence Will Transform Businesses in 2023

It is crucial to define AI technologies before studying how they are affecting business. "Artificial intelligence" describes any kind of computer software that performs human-like tasks, including planning, problem-solving and learning. It's theoretically correct to refer to specific applications as "artificial intelligence," but that doesn't delve into the more detailed intricacies. We need to look further to determine the type of AI that businesses are using most frequently.

ypical Applications of Al Machine learning, cybersecurity, customer relationship management and search engines are some of the most

common applications of AI.

Machine learning

Systems that collect enormous volumes of data frequently use machine learning. Data can be gathered by smart energy management systems from sensors attached to various assets, for example. Additionally, machine learning algorithms can contextualize massive amounts of data before delivering it to a company's decisionmakers so they can better comprehend energy usage and maintenance requirements.

Cybersecurity

Artificial intelligence is useful in cybersecurity because it can help professionals better understand, examine and evaluate crimes. It strengthens the tools that businesses and agencies use to fight cybercrime and aids such businesses in protecting client data. However, artificial intelligence can also be a very comprehensive resource and might not be practical in every application.

Importantly, AI can also serve as a new weapon for cybercriminals, who may use this technology to sharpen their techniques and improve their cyberattacks. Cybersecurity professionals and systems must therefore be "at the ready."

Customer relationship management

Systems for managing client relationships (CRM) are also evolving as a result of artificial intelligence. Technologies like Zoho and Salesforce have, in the past, required a lot of human interaction to stay correct and up-to-date. When AI is applied to these platforms, such standard CRM systems become auto-updating and self-correcting relationship managers.

• Search engines

Today, AI is enhancing how the world uses the web by strengthening the tools that billions of people use every day: the search engine and the browser. Such advancement enables people to further unlock the joys of discovery, experience the wonders of creativity and better harness the world's knowledge.

Today, we are witnessing an entirely new, AI-powered Bing search engine and Edge browser, all in an effort to provide better search, more thorough answers, new chat experiences and the capacity to further develop content. These technologies are what we can refer to as an "AI copilot" for the web.

Artificial Intelligence Altering the Business World

Human intelligence and invention are often seen as being supported rather than replaced by artificial intelligence. Despite the fact that AI currently struggles with performing activities that are commonplace in the real world, it is capable of processing and analyzing huge volumes of data much more quickly than a human brain can. Artificial intelligence software can provide a synthesized course of action to the human user. With this strategy, we can use AI to accelerate the decision-making process and often simulate the results of many human actions.

In addition, people are being freed from boredom as a result of AI automation. Teams no longer spend copious time on repetitive tasks, enabling workers to focus on more worthwhile projects. Another advantage of AI automation is that it is more accurate and less likely to miss crucial information. Indeed, this exactness will increase productivity and improve worker performance. Also, identifying novel patterns and connections in data - data analytics - enables businesses to gain insights that were previously unattainable. Natural language processing (NLP) further gives computers the ability to understand text and spoken words in much the same way human beings can. This is on many people's minds because it enables search engines to be more intelligent and chatbots to be more helpful; it also improves accessibility for persons with disabilities like hearing impairments.

The field of fleet management is another area of business where AI has significantly disrupted operations. Thanks to Tesla and other notable automakers, the impact of autonomous cars has been widely recognized for some time.

Additionally, new strategies are currently being developed for commercial freight enterprises using the same technology. Al-driven solutions, including monitors, are able to enhance and track mobile assets, such as self-driving semi- or couriertrucks, in almost real-time by using



on-vehicle sensors and telematics, resulting in considerable cost savings and safety advantages.

The customer service sector has received a substantial benefit from AI as well. It's no secret how prevalent chatbots have recently become on websites. They largely rely on artificial intelligence to help quickly and efficiently find needed solutions and information. If answers are not readily and speedily found, typically a live agent is available for support. The entire procedure is substantially streamlined and enhanced as a result of this faster, "dual" approach.

Artificial Intelligence in Sales

Sales platforms: These organizations and the salespeople they employ are currently reevaluating the ratio of humans to machines in maximizing sales effectiveness and cost savings. Automation with AI is already having an impact and will continue to do so. Businesses that employ AI for sales can increase leads by more than 50%, reduce call times by 60-70% and reduce costs by 40–60%, according to a Harvard Business Review study. These numbers clearly show that businesses looking to boost their bottom line should look into artificial intelligence.

Outbound email campaigns: Email campaigns are a staple of sales and marketing strategies for good reason because they provide results. Sending hundreds or even thousands of emails and keeping track of their responses, however, can be physically or mentally demanding. With AI systems like Levity, email responses are recorded, categorized and filed in accordance with user preferences. Such systems recognize the value of email interaction while minimizing the necessity for human reply tracking.

Demand forecasting: Though complicated, such important forecasts can be automated. Based on all client interactions and previous sales successes, artificial intelligence can enable the automated and precise development of sales estimates.

Lead scoring: AI helps analyze leads. Based on their likelihood to convert, these AI solutions can assist salespeople in prioritizing their customers. By gathering past data about a client, social media postings and the salesperson's customer interaction history, the AI algorithm can evaluate the opportunities or leads in the pipeline based on their likelihood of closing successfully.

e& Reaffirms Commitment to UN Women's Empowerment Values



e& announced its commitment to adopting the United Nations' Women's Empowerment Principles, reiterating the Group's support for women's empowerment and gender equality in the workplace.

The Women's Empowerment Principles (WEPs), established by the UN Global Compact and UN Women, is a set of seven principles that guide companies in advancing gender equality and women's empowerment in the workplace, marketplace, and community. The principles build on international labor and human rights standards and are based on the recognition of corporate interest in and responsibility for gender equality and women's empowerment.

As part of e&'s "Diversity, Equity and Inclusion" (DEI) strategy and ESG commitments, these principles focus on improving the representation of women at all levels (as well as other under-represented groups) within the group. Through this commitment, e& reaffirms the Group's dedication to promoting equity and attracting and developing female talent. This contributes to facilitating economic and social opportunities for women, strengthening e&'s competitiveness and its vision of achieving sustainable development as part of its ESG agenda.

Hatem Dowidar, Group CEO, e&, noted, "By signing the Women's Empowerment Principles, we are reaffirming our commitment to achieving gender equality in a tangible way. Throughout our transformation journey as a global technology and investment group, we have sought to create business practices that empower women, positively impact societies, and address gender disparities.

"As we deliver on our commitment to closing the gender gap and investing in future leaders, we are further accelerating our progress on gender diversity across all our business verticals. It is a great initiative to empower women locally, regionally, and globally. Supporting the UN initiative underscores our commitment to enacting real change."

Meanwhile, Dr. Mouza Al Shehhi, executive director, UN Women UAE Liaison for the GCC, said, "We are delighted to welcome e& as a signatory to the Women Empowerment Principles (WEPs). This step demonstrates the group's commitment to advancing gender equality throughout its operations. We look forward to the group implementing the WEPs framework and continuing its journey towards building an inclusive and gender-responsive organisation."

With the ambition of being an employer who creates positive change in the workplace globally, e& has already achieved measurable results in its drive to create an innovative, diverse, and engaged workforce.

Dena Al Mansoori, group chief HR officer, e&, added, "Creating a diverse, equitable, and inclusive workplace is not just the right thing to do but also the right decision for the success of our company. A culture that empowers and provides opportunities for our people leads to greater engagement and productivity while also amplifying the sense of belonging.

"I am proud that our leaders have embraced the UN principles of women's empowerment and remain confident that we can continue to enable women, as well as other under-represented groups, to flourish and contribute more effectively to socio-economic progress in our communities."

Vodafone Qatar Q1 2023: Strong Performance Across All Financial KPIs



Vodafone Qatar announced its financial results for the January to March period of 2023, showing improvement across all key indicators.

Vodafone Qatar's profitable growth continues, with 21 consecutive quarters

of YoY revenue growth. Compared to Q1 2022, Q1 2023 recorded a total revenue increase of 6.2% to QR 776 million. The Q1 2023 total revenue is impacted by the continued growth in the company's postpaid, fixed broadband services (GigaHome), managed services, Internet of Things (IoT) and handsets. In particular, service revenue grew by 12.3% to reach QR 687 million.

With the highest first quarter net profit to date, Vodafone Qatar's increased by 24.2% to QR 133 million. A positive EBITDA increase of 6.4% to QR 230 million is influenced by the company's continued effectiveness in implementing its cost optimization program.

Displaying strong subscriber growth, Vodafone Qatar is now serving 2.1 million mobile customers, representing a growth of 4.1% compared to Q1 last year.

It is worth noting that Vodafone Qatar was recognized as the World's Fastest Mobile Network, according to results from Ookla's Speedtest during Q3-Q4 2022.

Ooredoo Qatar, Reailize Focus on Optimal Network Performance and Customer Satisfaction



Ooredoo Qatar has implemented Reailize's Continuous Assurance (CA) solution to digitize their NOC and provide a single pane of glass into the health of their network, service and customer experience. It is another milestone in Ooredoo's strategy to transition from a network-centric to a service- and customer-experience-centric operational model.

To ensure a seamless customer experience, Ooredoo Qatar partnered with Reailize to transform their network operations using the CA Solution. This was subsequently put to the test at the biggest soccer tournament in the world, recently hosted in Qatar. With millions of fans arriving from all around the globe, Ooredoo Qatar experienced record-breaking data traffic exceeding 800 terabytes and more than 12 million voice calls. The CA solution from Reailize proactively identifies network anomalies before they impact customers, resulting in the highest quality of service for mobile users of the Ooredoo Qatar network.

Passion for Customer Experience

Sporting events taking place in Qatar generate an enormous surge in mobile communication and put significant pressure on the network. To prepare for this, Ooredoo Qatar leveraged Reailize's Continuous Assurance (CA) and Anomaly Detection solutions to drive Network and Operational Optimization squarely focused on Customer Experience. The Reailize team of domain experts partnered with the operations team at Ooredoo to achieve real-time monitoring and early detection of potential network issues and to proactively address customer and service impacts. The CA solution spans the Radio Access Network (RAN), core, IMS and transmission networks and monitors 2G, 3G, 4G and 5G domains.

Reailize combines automation and Artificial Intelligence (AI) with customer experience measurements to detect network anomalies, identify root causes of associated degradations and recommend actions based on predicted customer impact. Going forward, Ooredoo Qatar is adopting CA as a unified solution, providing customer experience-driven preventive, proactive and predictive assurance, enabling Ooredoo Qatar to focus on achieving optimal network performance and customer satisfaction while maintaining seamless operations.

"Delivering an exceptional customer experience, whether in-stadium at a major sporting event or across Qatar, is a key priority for us at Ooredoo," says Günther Ottendorfer, chief technology and infrastructure officer at Ooredoo Qatar. "Our commitment to this is evident in our efforts to establish and develop partnerships such as that with Reailize, which enable us to leverage the very latest technology and innovation to ensure we remain at the forefront of our industry."

Two French Telcos Seek Compensation for Replacing Huawei Kit



Bouygues Telecom and SFR are seeking financial compensation from the government for having to remove and replace Huawei's radio equipment, according to a local news source.

The two mobile operators have initiated legal proceedings against the French state at the Administrative Court of Paris to get compensation for the 2019 order to remove Huawei equipment from their networks in strategic locations.

The operators maintain that the process is cost-intensive, a burden enforced by the state when it refused

to issue an outright ban on Huawei equipment, as was done by the UK back in 2020.

The news report states that the French government opted to replace Huawei kit in strategically located areas, namely in densely populated areas where the vendor's equipment was prominent.

Not long after this decision, a new law dictated that any new or renewed mobile equipment licenses would need to be backed by France's cybersecurity agency, ANSSI. However, shortly after this announcement, the ANSSI said it was unlikely to give such permission for Huawei equipment, essentially issuing a de facto ban on Huawei's kit by 2028.

Both telcos contested the decision, given that Huawei played a key role in supporting both operators' 5G plans with its radio equipment. As per the news report, Bouygues and SFR are eager to recover the costs involved in extracting and replacing the Huawei equipment, which both companies have been doing since 2021 at the government's behest.

Bouygues has reportedly spent €82 million (\$90 million) for the process, noting that this only covers a small portion of the 3,000 antennas that will need to be replaced by 2028.

Meanwhile, SFR has not yet disclosed the figure it's seeking, but the operator needs to replace more than 8,000 antennas by the same deadline, meaning this cost is expected to exceed Bouygues' claims.

In the UK, BT has maintained that removing Huawei from its networks will cost around £500 million (\$700 million).

Nokia to Support Zain Jordan's Nationwide 5G Drive



Nokia has been selected by Zain Jordan in a multi-year deal to supply 5G Radio Access Network (RAN) equipment throughout Jordan. Through the deal, Zain will be able to support the digital transformation of the country by offering superior 5G services with enhanced connectivity and capacity to customers. A major part of the deployment is expected to be completed in 2023. Under the deal, which totals over 3,000 sites nationwide, Nokia will provide the latest generation of its AirScale Baseband, Massive MIMO radios and Remote Radio Head products. These are all powered by its energy-efficient ReefShark System on Chip (SoC) technology and combine to provide superior coverage and capacity. In parallel to deploying 5G, Nokia will also modernize Zain's existing 4G infrastructure.

Nokia has a long-standing partnership with Zain across several territories, including the Kingdom of Saudi Arabia.

Commenting on the development, Tommi Uitto, president of mobile networks at Nokia, noted, "We are delighted to be partnering with Zain Jordan on this project to modernize their complete Radio Access Network and introduce 5G technology, and by doing so, support the Jordanian Government's digital transformation objectives. The deployment of 5G is expected to stimulate the incubation and growth of new technologies and industries."

Omantel Enables Cloudification Within the Banking Industry



Through its subsidiary company, Oman Data Park, Omantel continues to enable large corporates and enterprises to migrate to the cloud, thus staying competitive in dynamic markets, by designing cost-effective solutions that streamline the customers' operations and achieve the desired growth without compromising on data security.

Omantel and BankDhofar have inked a five-year contract to provide the bank with a bespoke hybrid solution and a wide suite of data center offerings, from co-location and connectivity solutions into disaster recovery, followed by stepping stones for workload migration into cloudification. The long-term strategic partnership was signed at Omantel's headquarters by Omantel's VP of Enterprise Business Unit, Eng. Baha Allawati, and BankDhofar's Chief Information Officer, Dr. Tariq Taha. "Enterprises are constantly evolving, and their success is strongly linked with their ability to adopt new technologies and serve their customers with unique offerings to elevate their experiences. We are thrilled to sign a strategic partnership with BankDhofar and be part of their successful journey into cloudification," commented Omantel's VP.

"With our hybrid solution delivered through Omantel's Data Centre and hosting arm, Oman Data Park, we will be moving the workload and operations of BankDhofar into our data center as a part of their journey towards digital transformation and cloud adoption. This strategic move will optimize their operation, increase agility in product offering, and improve the customer experience. By leveraging the power of cloud technology, we are confident that this move will not only enhance the scalability and reliability of their operations but also enable them to stay ahead of the curve in a rapidly evolving industry. We are committed to delivering a seamless transition and ensuring that our clients' needs and expectations are met with the highest level of excellence," he added.

Dr. Taha said, "Core computing in the cloud has become a reality, and it is

reshaping the banking industry. At BankDhofar, we are keen on embracing the future, as we are always looking for ways to stay ahead of the curve. Therefore, adopting state-of-the-art solutions provided by our partner, Omantel, is key towards streamlining our operations and [to] be more agile in a dynamic market while at the same time ensure maximum data security. I am confident that this partnership will bear fruit, and it will foster cloudification among large entities."

As a major step forward for streamlining the bank's operations, Oman Data Park's General Manager of Business Development, Hassan Abdul Ali, explained, "We have empowered BankDhofar with disaster recovery capabilities across Tier III data centers and cloud, and this is a game-changer as it will automate the disaster recovery procedures, significantly reduce data recovery time, and enable BCP operation anytime, anywhere. Moreover, the bank will have the agility and flexibility that is needed to stay competitive. It can handle peak loads with ease and without any service disruptions, thanks to the elasticity of the cloud."

The Rise of 50G-PON:

Delivering Enhanced Fiber Performance

Over the last two decades, passive optical network (PON) technology has evolved exponentially to support the fast-growing demand from emerging services like ultra-HD video, immersive experiences, 5G wireless transport and cloud, among others.



ccording to Cisco, the average broadband speed per user has grown and will continue to do so, from 45.9 Mbps in 2018 to

110.4 Mbps in 2023.

After the initial 1 Gbps speeds, PON standards have transitioned into 10 Gbit/s Ethernet PON and 10-Gigabit-

capable PON (XGS-PON). The access speed of PON over a single wavelength has increased almost 100 times, and each generational upgrade in PON technology — expected every 8 to 10 years — is driven by the constant increase in bandwidth demand.

As more high-throughput, lowlatency and high-availability services emerge, PON technology becomes a core element in building the gigabit society that is being deployed in most countries, including the Middle East region.

According to the ITU, worldwide bandwidth consumption grew at a CAGR of 50% from 2015 to 2021, with no regions showing any signs of slowing down. Even the African continent is advancing its journey of fiber optic deployments.



TIMELINE OF EVOLUTION TO 50G-PON

Timeline of Evolution to 50G-PON

Evolving from the Ethernet Passive Optical Network (E-PON), the massive deployment of Gigabit Passive Optical Network (GPON) from 2010– 2020 was followed by 10G-PON from 2020 until the present.

Because users want greater broadband access speed, network operators have been upgrading to 10 Gigabit-capable Passive Optical Networks (XGS-PON) to provide faster Gigabit broadband service. By the end of 2021, nearly 10 million 10G-PON OLT ports had been deployed worldwide. Whereas in 2022, XGS-PON OLT port shipments had increased by 2231%, jumping from over 30,000 in 2019 to almost 750,000 by 2022.

10G-PON's industry chain has already matured. In terms of standards, the ITU's 10G GPON asymmetric 10G/2.5G started commercialization in 2012, while the symmetric 10G GPON 10G/10G 2016 standard began commercialization in 2017.

Because of this standardization, millions of homes and businesses can access global networks seamlessly. What is more, the next generation PON, known as Higher Speed PON (HSP), is set to provide speeds of 50 Gbit/s per wavelength. 50G-PON is the preferred nextgeneration choice after XGS-PON, as its time-division multiplexing-passive optical network (TDM-PON) can coexist with the previous PON technologies, increasing capacity by a factor of five versus 10G-PON and supporting new business requirements further.

In September 2021, the ITU-T officially published the first version of the 50G-PON standard. This includes technical specifications that support asymmetric rates and two generations of coexistence (10G-PON or GPON). A year later, the ITU-T added the technical specifications of the symmetric 50G-PON (50Gb/s in downstream and upstream) and the coexistence support for three generations (50G-PON, 10G-PON and GPON).

The 50G TDM-PON and 10G-PON coexistence evolution upgrade support smooth upgrading, with the implementation methods divided into two schemes: MPM dual-mode (builtin wave combining component) and external wave combining.

50G-PON: Benefits and Use Cases

The 50G-PON system capitalizes on the enhancements of optical transceiver components and introduces key innovations in activation procedures, contention-based operation and expanded cryptographic features – meeting the new and demanding requirements of the digital era.

The HSP project expands the capabilities of ITU-T PON beyond those of previous generations by increasing the line rate as well as enhancing its robustness and efficiency, while crucially supporting coexistence with installed deployments.

The 50G-PON systems support a continued and accelerated growth in user data traffic, which, combined with 5G wireless transport, increases and enables new applications such as smart power grids, industrial manufacturing and autonomous vehicles.

The PON technology is developing in various directions, one of which is all-optical access, where fiber-tothe-home (FTTH) is being upgraded to provide gigabit bandwidth in all corners. In FTTH construction, 80% of the total investment goes to the optical distribution network (ODN). The introduction of new technologies such as 50G-PON helps maximize this investment. To address this, Huawei's 50G-PON solution features major innovations.

During MWC 2023, Huawei released the industry's first commercial

50G-PON solution for ultra-broadband access, with optical modules increasing the following: transmit power by 4.5 times, photon absorption rate to nearly 100% and optical power budget by 25%.

Huawei's 50G-PON optical modules also enable existing ODNs to carry new services by using innovative cell-level tapered amplifiers and superlattice reflection structures.

Ensuring a smooth service upgrade, Huawei's 50G-PON optical modules are reduced by 40%, thanks to the unique high-precision angular multiplexing/demultiplexing and multi-component integrated chip technologies and one port that supports all three PON working modes – GPON, 10G-PON and 50G-PON.

Another direction is an all-optical campus where passive optical LAN (POL) technology replaces traditional Ethernet switches to implement fiberto-conference room, fiber-to-camera, fiber-to-office desk and fiber-tomachine connections.

Huawei has gone all-in on 50G-PON, having demonstrated an early prototype at MWC 2019 based on mature 25G optical components that delivered 50-Gbps transmission over a single wavelength via physical PON links designed with fiber dispersion and transmitter/receiver bandwidth compensation technologies.

During MWC 2023 as well, Huawei launched the industry's first 50G-POL prototype. This can help build nextgeneration Wi-Fi 7 campus networks. Cloud computing, big data and IoT technologies are being adopted on a larger scale in campus scenarios such as enterprise offices, education and healthcare. As a result, the requirements placed on the campus in terms of network bandwidth, latency and reliability are higher than ever before.

50G-PON is indeed the nextgeneration PON standard that improves low latency, slicing, energy savings and reliability, paving the way for a smooth evolution of 10G-PON.



Once fully commercialized, 50G-PON will be supported by a robust component and system supplier ecosystem, allowing the optical networks being built today to accelerate the convergence of residential broadband and smart city applications. This can be delivered with SLA-based enterprise and 5G mobile base station connectivity. This will also serve as the foundation for dozens of emerging applications and industry 4.0 use cases.

Without a doubt, 50G-PON will be a valuable tool in operators' toolkits for business services and is well-suited to serve smart campuses, medical clinics, video production studios, smart factories, edge data centers and cloud-centric SMEs and SoHos.

A 50G-PON system can accommodate four 10 Gbps carrier Ethernet services, or one 25 Gbps service plus one 10 Gbps service, and complements other enterpriseheavy technologies, such as SD-WAN, massive machine vision and virtualized CPE. 50G-PON is also ideal for backhauling applications for emerging and future Wi-Fi scenarios like public hotspots and private wireless LANs. Small cell backhaul is a growing use case for 50G-PON, which can be seen for in-building small cells, such as in factories, shopping malls and airports.

Another vendor that is actively investing in and continuously advancing the industrialization of 50G-PON is ZTE. During MWC 2023, the company unveiled a three-mode Combo-PON product solution that supports the three generations of PON technologies with the same ODN through an independent wavelength stacking mechanism. This solves problems such as high construction costs, large space occupation in central offices, complex optical fiber cabling and difficult 0&M during the PON evolution journey.

Sooner than later, we will see more commercialization of 50G-PON, driving fiber access applications to broaden coverage and capacity.



Security Threats Impacting Mobile Landscape

Protecting data privacy is becoming vital in today's increasingly digitalized world. As online activity and the number of mobile applications keep growing, the owners of such applications are constantly under the radar of governments and regulatory authorities for how they are handling and managing user data.



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Mobile security has become a factor that organizations and individuals cannot do without

s a result, user devices have become the point of a potential break-in when it comes to hacking into the critical and sensitive information of both individuals and corporates. Hence, mobile security — the protection of

mobile security – the protection of mobile devices against cybersecurity threats – has become a factor that organizations and individuals cannot do without.

Moreover, the threat landscape has grown with the remote working practices that followed as a result of the COVID-19 pandemic. During the period, the increased use of video conferencing and messaging tools, combined with the streaming of entertainment content and gaming, increased the flow of traffic as well as the volume of attacks. However, despite the number of cyberattacks, only 15% of organizations globally have a "mature" enough level of readiness to be resilient against today's modern cybersecurity risks, according to Cisco's recent Cybersecurity Readiness Index.

More Sophisticated Attacks

In recent years, the sophistication of the attacks has even stumped the best IT security measures. Experts believe that the attacks have moved from direct targeting to a strategy of steadily increasing the number of attacks until they are eventually successful. In 2022, ransomware attacks affected organizations on a global scale, including breaches such as distributed denial-of-service (DDoS), data infiltration, rare triple extortion threats and so on, as remote workers accessed corporate data and applications using untrusted mobile devices.

Securing the Mobile Domain

When discussing mobile security, many factors come into play: monitoring and risk assessment; contextual and continuous authorization; and dynamic adaptation, involving people, applications, networks and devices. For example, a malicious call could be



downloaded into the mobile device, which could later infect the security controls as part of a bigger attack on privacy. Data can be stolen from the device, and it could create a gateway to penetrate corporate networks and plan payment extortion attacks.

Cybercriminals target businesses to gain access to sensitive data and steal identities with fraudulent intent. Mobile devices are easy targets for these cybercriminals, as most users do not practice sufficient safety habits for their protection.

"I find that the weakest link in any organization, whether it is users or customers, is people. My biggest challenge is to make sure that our people have the right skills and are knowledgeable in cybersecurity, and that the process of cybersecurity is embedded in every process," says Celia Mantshiyane, CISO at MTN South Africa.

Increasing Mobile Security

Importantly, the mobile industry has recognized solutions such as MTD

and MDM to protect the mobile landscape.

Mobile Threat Defense (MTD) solutions detect and prevent phishing and malicious app attacks on mobile devices and the network. Alternately, Mobile Device Management (MDM) is a management tool that allows compliant devices to access corporate email, apps via the corporate app store and data, securing data-in-transit between the mobile device and the corporate network.

While MTDs can allow employees to use their mobile devices for work purposes, security personnel can quicken the response times, with MTDs preventing attacks before they intensify. MTDs will also provide better visibility of the risk level of the mobile workforce. It also supports regulatory compliance by ensuring that critical organization data is either on-premise or in the cloud.

As part of the automation solution, MDM has the advantage of saving precious time through automating repetitive tasks, such as manually configuring Wi-Fi settings on employee devices, which would otherwise require installing specific applications.

Many companies adopt the BYOD policy as a means to cut down on the additional costs of purchasing equipment for their employees; however, this practice comes with its own set of issues. BYOD employees also use their devices while working remotely, potentially using patchy and unsecured Wi-Fi networks. Public networks are prime haunts for cyber criminals on the prowl, who can trap users using decoy networks, get access to the users' web browsing activity and steal login credentials. MDM allows IT admins to manage both employeeand enterprise-owned devices from the same console, thus supporting consistent security measures on all devices in the organization. It also helps improve employee productivity and efficiency by controlling nonessential applications from personal

devices and preventing employees' access to those apps.

Most importantly, MDM solutions support compliance regulations like HIPAA, PCI-DSS and GDPR, which require strict data protection measures.

Some Common, Recurring Mobile Threats

Phishing attacks: In 2022, over 50% of personal devices were exposed to a mobile phishing attack every quarter. The threat continues today.

Unsecured IoT Devices: IoT devices with weak in-built security are vulnerable to network attacks such as data thefts, phishing attacks, spoofing and DDoS attacks.

Mobile Malware: Each year, mobile malware gets more and more sophisticated. Malware developers have even managed to sneak their malware into app stores and thus infect consumer devices.

Ensuring Tight Mobile Security:

Enforce password policy: An effective password policy can significantly prevent sensitive data from being stolen or misused.

Avoid public Wi-Fi: It is prudent to resist the temptation to use public Wi-Fi, as these networks can be playgrounds for cybercriminals.

Deploy mobile device encryption:

Mobile device encryption for both hardware and software is one of the best ways to secure data on smartphones and tablets. It can be deployed through the device's settings access by enabling the "encrypt phone or encrypt tablet" option.

Clear mobile security policy:

Establish clear rules for how mobile devices are used and secured within the organization.

Ensure endpoint security: From a security standpoint, making sure that such protections are embedded in every process – SecDevOps, ISOs and NIST – is crucial.

Securing email use: A watertight email security posture will protect organizations against malicious threats such as malware, spam and phishing attacks.

VPN and VPN encryption: VPN encryption ensures additional security by encoding the data packets in a manner that can only be read by the authorized entity.

Deploy secure web gateway: Secure web gateways provide an extra layer of network protection by controlling web requests against company policy and ensuring that malicious applications and websites are blocked and inaccessible. An API gateway also plays an essential role as a secure access point, protecting an organization's APIs by blocking cloudnative threats that can lead to the loss of sensitive data.



Mobile devices are easy targets for cybercriminals, as most users do not practice sufficient safety habits for their protection



TELECOM Review

Huawei Switches to Its Own MetaERP System



Huawei has replaced the legacy Enterprise Resource Planning (ERP) system with its MetaERP system, over which it will have full control. ERP is the most critical enterprise management IT system, allowing efficient collection, storage, interpretation and management of information.

MetaERP currently handles 100% of Huawei's business scenarios and 80% of its business volume. MetaERP has already passed the tests of monthly, quarterly and yearly settlements while ensuring zero faults, zero delays and zero accounting adjustments, according to the company statement.

Huawei has complete, full-stack control over MetaERP, which has

been built with other Huawei systems like EulerOS and GaussDB. Huawei has also worked with partners to incorporate advanced technologies, such as cloud-native architecture, metadata-driven multi-tenant architecture and realtime intelligence, into the MetaERP system, significantly improving service efficiency and operational quality. In a range of fields, including both ERP and PLM (product lifecycle management), Huawei aims to work with partners to build more efficient and secure core enterprise business systems that are not subject to any restrictions. Huawei hosted the MetaERP Award Ceremony to recognize the individuals and teams who made critical contributions to this project.

Why It's a Big Deal for Huawei

Huawei introduced the MRP (Manufacturing Resource Planning) Il system in 1996 and later expanded to the ERP system with several upgrades. The old ERP system was the core system underpinning Huawei's enterprise operations and rapid development for more than 20 years. It supported Huawei's efficient business operations, which generate revenues across 170 countries and regions.

However, following stringent US regulations over its products and services since 2019 and other economic headwinds, Huawei began facing increased external pressure and business challenges. The company decided to develop a 100 percent- controlled MetaERP system to replace the old ERP system - one of Huawei's most extensive and complex transformation projects in recent times. Over the past three years, Huawei has invested significant capital and manpower resources in collaboration with ecosystem partners to overcome related challenges that arise with a future-oriented, ultra-large-scale and cloud-native MetaERP system that is already operational.

Nokia Reports Strong Net Sales Growth in Q1 2023



Nokia has reported that net sales increased by 10% in Q1 2023, benefiting slightly from foreign exchange rate fluctuations along with the following drivers.

On a constant currency basis, Nokia's net sales increased 9%, with growth across all business groups except Nokia Technologies. Network Infrastructure and Mobile Networks both grew at double-digit rates, with Network Infrastructure increasing 13%, led by Optical Networks and IP Networks, and Mobile Networks increasing 13%, reflecting the continued ramp of 5G in India. Cloud and Network Services increased 3%, while Nokia Technologies declined 22%, due in part to the option exercised in Q4 2022 by a long-term licensee.

The company reported that gross margin decreased 310 basis points to 37.5% in Q1 2023, and comparable gross margin decreased 300 basis points to 37.7%. Gross margin performance reflected the negative impact of regional mix in Mobile Networks, as well as lower net sales in Nokia Technologies and lower gross margin in Cloud and Network Services. Network Infrastructure gross margin increased strongly, in part due to a positive mix shift within businesses.

Nokia reported operating profit in Q1 2023 of EUR 426 million, or 7.3% of net sales, up from 6.6% in the year-ago quarter. Comparable operating profit decreased to EUR 479 million, while comparable operating margin was 8.2%, down from 10.9% in the year-ago quarter.

Net profit in Q1 2023 was EUR 289 million, compared to EUR 219 million in

Q1 2022. Comparable net profit in Q1 2023 was EUR 342 million, compared to EUR 416 million in Q1 2022. The decline in comparable net profit reflects the lower comparable operating profit and higher income tax expenses related to unrecognized deferred tax assets in Finland in Q1 2022.

Commenting on the report, Pekka Lundmark, president and CEO, said, "We started this year with the unveiling of a renewed corporate strategy and refreshed brand. This reflects who we are today: a B2B technology innovation leader unleashing the exponential potential of networks. Q1 also saw the launch of our new industry-leading optical networking platform PSE-6s and AirScale Habrok, our latest 5G massive MIMO radios powered by a new generation of ReefShark chipsets. Both products are designed to help our customers achieve more with lower power consumption, supporting our intent to develop ESG into a competitive advantage."

BlueJeans Supports Verizon's Video Assist for Retail-Like Customer Experience



As shared by BlueJeans Network's Director of Customer Marketing, Sharni Medina, one of their platform's use cases has addressed Verizon's need for a scalable, enterprise-grade platform to seamlessly connect online customers over a secure video call with a store representative.

Powered by BlueJeans Meetings, the simple-to-use Video Assist has been introduced across 1,500 Verizon stores.

"What I see is: a customer goes on an Android device to make a video call to a sales specialist who's using an iPad inside a retail store," says Ryan Tucker, Verizon's vice president of consumer sales, South Central Region. "All of that works on BlueJeans. The previous platform we used didn't work all the time."

Verizon leveraged BlueJeans' iOS and web software development kits to build the video experience directly within the specialist's mobile point of sale (mPOS) solution as well as the customer's browser on verizon.com.

The ability to access Verizon's mPOS directly from the platform is a "complete game changer," said Jarrett Dawson, Verizon's director of consumer sales and operations.

Retail customers benefit from Video Assist's outstanding audio quality as well as an option to flip the camera perspective, enabling store specialists to show products or features in real time.

When Verizon store specialists are not serving a customer in person, they can

use an iPad to sign on to the platform and help online customers.

"With Video Assist, a specialist can walk around the store and show the customer the phone. They can handle the payment. They can enter the customer's information and then arrange to ship it to their house. Or they can organize for the customer to pick it up from the store that's around the corner," added Tucker.

Customers' feedback on their retaillike experience using Video Assist has been positive, while Verizon employees have also boosted their productivity and sales targets. This use case has invaluably built the Verizon brand and instilled confidence in the BlueJeans product.

Ken Lain, Verizon's VP of sales and service operations, agreed that there's an "additional level of trust that comes from a live video interaction versus a chat session or email."

Ericsson Q1 2023: Net Sales Boost Driven by Enterprise



Ericsson has reported its first-quarter 2023 earnings results. In summary, net income fell 46% to SEK 1.6 billion in the January-to-March period, while net sales rose 14% but were flat when taking currency exchanges and other parameters into account.

For the net sales segments, adjusted Cloud Software and Services sales increased by 5% YoY, while adjusted Enterprise sales increased by 19% YoY, driven by Enterprise Wireless Solutions.

As per the earnings statement, Ericsson's OPEX increase was driven by investment in Enterprise Wireless Solutions and the consolidation of Vonage. The Vonage sales were valued at SEK 3.9 billion in the quarter.

"We are on a journey to shape the future industry landscape and extend our addressable market by leveraging our 5G capabilities. We continue to execute on our strategy to strengthen our leadership in Mobile Networks, grow our enterprise business, and drive continued cultural transformation," commented President and CEO Börje Ekholm.

Ericsson Q1 2023 Investor Presentation Continuing to fine-tune their portfolio to optimize profitability in the Enterprise business, by the end of Q1 2023, Ericsson had completed the divestiture of its IoT platform, which will reduce quarterly losses by about SEK 250 million going forward.

The Swedish telecom giant is also stepping up its cost-cutting program as it

expects a "choppy environment" this year after profits fell in the first quarter of 2023.

Ericsson will increase its cost-savings ambition by reducing costs by 11 billion Swedish kronor (\$1.1 billion) in 2023. In line with the pervasive layoff trend at tech companies, they announced slashing 8,500 jobs worldwide, or eight percent of their workforce.

Ericsson said it expects customers "to remain cautious" with their investments and continue to adjust their inventories in the second quarter of this year. "We expect the slower growth we saw in Q1 (the first quarter), caused by the slower global economy, to continue in Q2," Ericsson added.

Yet, the company expects a gradual recovery in the second half of 2023, primarily as they "expect the inventory adjustments to be completed and cost reduction activities to start flowing."

A Partner From Day One: Vodafone Oman Recognizes Netcracker's Key Contributions



Netcracker Technology has received the Chairman Award for Champion Partner of the Year from Vodafone Oman in recognition of its invaluable contributions during the mobile operator's first year of operations. A partner from day one, Netcracker played a key role in supporting Vodafone to develop new products and services, expand its reach and strengthen its brand across the country. The award was presented to Netcracker during Vodafone Oman's first-anniversary celebration.

The Chairman Awards recognize the contributions of employees, working teams and business partners in

Vodafone's journey. In its first year, the recipients of the awards each played an instrumental role in the launch of a new-generation telco in Oman.

The third operator to establish operations in the Sultanate of Oman, Vodafone made its debut in March 2022 as a 100% fully digital operator in a highly competitive market. Vodafone initially selected Netcracker Digital BSS in cloud deployment to deliver a superior customer experience and monetize innovative new services. Since then, Vodafone Oman has extended its relationship with Netcracker for analytics, DevOps processes and an integration layer to add to the operator's data-driven capabilities and managed services.

"As a new operator establishing a presence in the Sultanate, we selected Netcracker as a strategic partner from the very beginning to support our mobile network launch, enable fast time to market and help us to deliver a rich digital customer experience," said Bader Al Zidi, CEO of Vodafone Oman. "We are proud of our partnership with Netcracker, who time and again has proven its commitment to excellence and unwavering focus on delivering value to our customers. I look forward to building on our success and exploring new opportunities for growth and innovation as we continue our journey of success in Oman."

"We are truly honored and humbled to receive this recognition from Vodafone Oman," said Benedetto Spaziani, GM at Netcracker. "We were proud to be an inaugural partner for a brand new mobile operator, and since then, Vodafone Oman has continued to place its trust in us with additional projects and engagements, through which we aim to achieve continued success going forward."

NEC's AI Powers New Data on Cancer Vaccine



Transgene, a biotech company that designs and develops virus-based immunotherapies for the treatment of cancer, and NEC Corporation, a leader in IT, network and AI technologies, announced that new data will be presented today on TG4050, an individualized neoantigen cancer vaccine, at the American Association for Cancer Research (AACR) Annual Meeting in Orlando, Florida. TG4050 is based on Transgene's myvac® platform and powered by NEC's cutting-edge AI capabilities.

The new positive data have been generated from patients with HPVnegative head and neck cancer and ovarian cancer who have been enrolled in two ongoing Phase I trials assessing TG4050.

TG4050 has demonstrated the ability to induce strong immune responses against targeted antigens in patients, which are expected to result in extended remission periods.

Hedi Ben Brahim, CEO of Transgene, noted. "Our individualized neoantigen vaccine TG4050 continues to deliver very encouraging clinical and immune response data, combined with an excellent safety profile. These results suggest that TG4050 has the potential to extend the remission period for cancer patients who have undergone surgery, giving new hope to a patient population who currently have no treatment options available except a watchful followup. We are continuing to build a strong and compelling clinical data set to support the benefits of this

novel personalized immunotherapy. In parallel, we, along with NEC, are preparing for a Phase II trial as part of the registration path, which could start as early as the second half of 2023 for head and neck cancer which represents a \$1bn+ market opportunity for the program. TG4050 also has the potential to be developed for preventing relapses in other solid tumor indications."

Meanwhile, Masamitsu Kitase, corporate senior VP and managing director of Healthcare Life Sciences Business, NEC Corporation, commented, "It is very encouraging to see such promising clinical and immune response data contributing to the momentum of TG4050's development. We look forward to working closely with Transgene to maintain this advancement, and we are confident that our personalized therapy will benefit the health of individual patients across the globe."



Technology Assisting Humanitarian Efforts to 'Open New Horizons'

In war-ravaged Libya, young people are actively turning towards technology to help themselves get back on track toward progress. After years of political disruption, a tech competition organized to encourage and promote tech culture and the startup spirit among the youth witnessed overwhelmingly enthusiastic participation. The event organizers hope that such events will "open new horizons" for young Libyans. They say that the competitions are helping the young to not only dabble with technology but also manage their relationships and work towards inclusion, unity and peace.

imilarly, in Nigeria, a \$672 million fund was recently initiated to support cash-strapped start-ups in the tech and creative sectors. Nigeria boasts a high number of start-ups in the tech and fintech sector, which still struggle to attract funding as they are unable to provide banks with the necessary collateral for loans. The Digital and Creative Enterprises Programme (DCEP) fund will target job creation opportunities in the tech and creative sectors. Indeed, technology is transforming many aspects of our lives, albeit in both positive and not-so-positive ways. However, as connected human beings, we should endeavor to utilize the capabilities of technology to enhance our lives, and this article aims to shed light on such



developments that are positively impacting the humanitarian sector.

One company that has been leveraging satellite connectivity for humanitarian operations is IEC Telecom, an international satellite service operator that delivers proprietary communication solutions to areas with no/limited GSM access.

The company utilizes an advanced filtration toolkit to reduce consumption for unessential operations and instead channel valuable data toward missioncritical operations. Focusing on wider adoption of satcom operations through cost savings, IEC Telecom offers many compression services that reduce the size of files in transfer by up to 95%. To ensure secure humanitarian operations, the company offers NGOs a multi-layer cyber shield to cover all types of online interactions, from basic email exchanges to big data transfers.

Talking about their newest solution portfolio, Nabil Ben Soussia, chief commercial officer, IEC Telecom Group, says, "Xpand by IEC Telecom is a comprehensive system powered by Starlink and enhanced with OneGate, our proprietary digital network management system. OneGate allows terminal owners to issue partial data vouchers, as such, enabling the whole [of economically challenged] communities to share the same subscription. Xpand comes with a suite of optimized applications designed to consume less traffic than popular software. This way, such advanced services as telemedicine and remote learning are becoming increasingly accessible to remote communities."

Innovation Under Pressure

Motivated by the February earthquakes in Turkey and Syria that brought down entire communication systems, a local company, i2i, has vowed to tackle such unfortunate occurrences in the future on their terms. The company has decided to upgrade its existing multi-vendor integrated private 5G network system and develop it into a "5G network-in-a-box" that could be transported to disaster areas to provide local 5G coverage and be powered either by the availability of the local grid, a generator or even batteries. A prototype system that integrates a combination of multivendor technology platforms, including satellite communication, is expected to be ready in the coming three to four months. Once enough portable 5G network systems units are operational, rescue teams in the field can have readily available connectivity for efficient operations.

Aiding Affected Telecommunication

Moreover, as part of UAE's "Gallant Knight / 2" campaign to support the earthquake-affected people in Turkey and Syria, Etisalat by e& UAE sent telecommunication equipment worth AED 20 million (\$5.5 million) as humanitarian support to rebuild Turkey's telecommunication infrastructure in earthquake-affected areas. The equipment included over 4,000 radio and digital units to reactivate damaged mobile phone networks and restore the disrupted service. Several telecom companies have offered assistance to rebuild the networks that were damaged beyond repair.

Tech at Its Best

During the rescue operation in Turkey and Syria, social media was used to share vital information instantly as well as organize support. Rescuers were able to pull victims from the rubble when they had shared their locations through their social apps. Supported by blockchain technology, the crypto communities were able to raise millions of dollars in donations, keeping the financial stream flowing while banking operations failed due to the communication breakdown. Furthermore, developers set up fastloading basic HTML open-source crisis assistance websites and platforms that were able to create heat maps for rescue services. Combined with AI technology, rescuers were able to identify survivors with information gathered from their calls for help; streamline blood bank information; and provide makeshift accommodations, other urgent humanitarian assistance, medical aid, etc. Satellite images expedited relief operations in the worst-hit locations and helped

determine the state of infrastructure in order to deliver aid most efficiently.

Apart from the life-saving recovery and support efforts that we have seen over the years, technology is poised to make communities safer and more resilient through the predictive analysis of potential catastrophes and the prevention of cyberattacks using emerging technologies such as AI, ML and digital twins, among others. Technology complements efficient humanitarian work, which is as important as ever in today's world. Governments and private aid agencies and organizations would do well to invest in these technologies to scale up solutions that could effectively make the world that much safer for humanity. 🎟



Apart from the lifesaving recovery and support efforts that we have seen over the years, technology is poised to make communities safer and more resilient



Amazon Web Services to Pump \$1.8 Billion Into South Africa

Amazon Web Services (AWS) announced its plans to invest 30.4 billion South African rands (US\$1.8 billion) in its cloud infrastructure in South Africa by 2029. The company has published a new economic impact study (EIS) that outlines the group's investment in its AWS Africa region since 2018.

The report also shows a forecast of the investment needed to construct, operate, and maintain Amazon's cloud infrastructure in the country.

Amazon's recently released report reveals that South Africa is set to receive a significant investment of \$2.5 billion between 2018 and 2029. As per the report, AWS's investment during the same period will contribute approximately \$4.4 billion to the country's GDP and will generate more than 5,700 full-time equivalent (FTE) jobs in local South African businesses annually. The AWS Sub-Saharan Africa General Manager noted that their investment has already positively impacted local businesses by creating training and skilling programs for the workforce, supporting community engagement, and establishing sustainability initiatives across the country.

AWS Spreading Its African Wings

AWS's recent investment announcement follows the news that the company opened its first office in Nigeria in November 2022, making it the second African country, after South Africa, to have a local office. It has been seven years since AWS launched its first African office in Johannesburg in 2015. In 2018, the company launched infrastructure points-of-presence in Johannesburg and Cape Town, followed by an edge location in Nairobi in 2020 and a new Johannesburg office in 2022. In the same year, AWS established the first African AWS Infrastructure Region in Cape Town, which is still the only infrastructure region on the continent.

Investment of Nearly £150M Set to Boost UK's Wireless Infrastructure Strategy

New plans and investments are in place to boost the UK's digital connectivity and put the country at the forefront of future telecom technologies.

Technology Secretary Michelle Donelan stated that the government will lead by example, "putting wireless connectivity right at the heart of new and existing infrastructure" to ensure that it builds the right framework suitable for the digital age.

An investment package worth almost £150 million was unveiled, with up to £100 million allocated to pioneer future telecoms and 6G research; £40 million to drive 5G adoption; and an additional £8 million to further promote new satellite connectivity to the most remote 35,000 locations. The package is aligned with the new Wireless Infrastructure Strategy, which sets out the government's ambitions to provide the fastest, most reliable wireless coverage available nationwide. As per the new policy, all populated areas are aimed to be covered by 5G standalone (5G SA) by 2030.

According to the latest figures, in April 2023, the UK is due to hit 75% gigabit broadband coverage. The country is already on track to deliver this high-speed internet access at 99% by 2030. Moreover, 77% of the population already benefits from basic 5G access.

In preparation for 6G development, improved 5G coverage across the country will unlock new technologies that will change people's lives and business operations.

WhatsApp's Multi-Device Feature Is Now On

Meta Chief Mark Zuckerberg has confirmed that you can now "log into the same WhatsApp account" on multiple phones. Previously, users could only use one WhatsApp account on one phone and multiple companion devices.

Based on the platform's FAQ, users can use up to four linked devices at a time. This is done by linking your primary phone to another phone, WhatsApp Web, desktop, tablets and other devices.

Known for its end-to-end encryption, each linked device connects to WhatsApp independently while maintaining the same level of privacy and security for personal messages, media and calls.

The primary phone doesn't need to stay online to use WhatsApp on linked devices, but if it has been inactive for over 14 days, your account on other linked devices will be automatically logged out.

A word of advice: users should make it a habit to review all devices linked to their accounts because, after 30 days of inactivity, WhatsApp will also automatically disconnect linked devices.

Users must have a primary phone to register their WhatsApp account and link new devices via a one-time-pin (OTP) code or by scanning the code off the main device.

With the latest app version, both Android and iOS users will have access to WhatsApp's multi-device feature, which should be rolled out across the world in the coming weeks.

Green Tech Transition: The Countries Most and Least Prepared

According to the data released by the United Nations Conference on Trade and Development (UNCTAD), the five countries most prepared to use and adopt technologies that are essential to the green tech transition are the United States, Sweden, Singapore, Switzerland and the Netherlands.

In contrast, at the bottom of the ranking of 166 countries based on their level of preparedness were Guinea, the Democratic Republic of Congo, Gambia, Guinea-Bissau and South Sudan.

UNCTAD researchers used five indicators to assess countries worldwide: ICT, skills, industry, research and development, and finance.

As a clear observation of the results shows, there's a clear divide between high- and lowincome countries. To be specific, Latin America, the Caribbean and sub-Saharan Africa are the least ready to harness frontier technologies, which puts them at the most risk of missing out on current technological opportunities.

Additionally, EY stated that there are three action areas to focus on when promoting green growth: guidelines and frameworks, technological innovation and responsible technology usage. By bringing together the business and public sectors as well as academic and government institutions, it will be more beneficial to co-create sustainable benefits enabled by technology.

Girls Currently Being Left Behind in Digital World, Finds UN Report

Some 90% of young women and teenage girls in the world's poorest countries have no access to the internet, according to a recently published United Nations report.

The UNICEF report, Bridging the Digital Divide: Challenges and an Urgent Call for Action for Equitable Digital Skills Development, assesses the gender digital divide among young people aged 15-24 years by analyzing available data on internet use, mobile phone ownership and digital skills in mostly low- and lower-middle-income as well as some middle-income economies.

The report acknowledges the need for more gender-disaggregated data to better monitor, understand and work toward digital inclusion and finds that girls are being left behind in an increasingly digital and connected world. Adolescent girls and young women are being "shut out when it comes to digital skills," it said.

By contrast, about 78% of young men and teenage boys in the poorest countries are offline, according to UNICEF, which in its report examined data usage in 54 mostly low-income nations.

This translates to about 65 million adolescent girls and young women aged 15-24 who don't have access to the internet, versus some 57 million of their male peers.

"Closing the digital divide between girls and boys is about more than just having access to the internet and technology. It's about empowering girls to become innovators, creators and leaders," Robert Jenkins, UNICEF director of education, said in a statement.

5G Expansion Accelerates in Developing Nations

As operators in developing nations switched on their networks in the second half of 2022, commercial 5G launches recovered, according to S&P Global. According to Kagan's 5G Tracker, at least 238 mobile carriers servicing 94 markets globally had started offering 5G services by the end of 2022.

Twenty-four new operators were reportedly added to this list in the second half of 2022, according to S&P Global. Since the tracking of 5G launches began in 2018, Africa has had nine new launches. These have included Telkom in South Africa, Vodacom Group in Tanzania, Unitel in Angola, Societe Francaise de Radiotelephone (SFR) in Reunion, Orange in Botswana, Safaricom in Kenya and MTN Group in Zambia and Nigeria.

The government has provided considerable assistance for the African markets that have already started commercial 5G services, especially in the release of the spectrum and the promotion of a transparent, forwardlooking regulatory environment, S&P Global noted.

S&P Global further predicted that emerging regions in Africa, Asia-Pacific, Eastern Europe and Latin America will lead launches in the coming months because most operators in developed markets have already delivered commercial 5G services.

The recent launch of Vodafone Group in Tanzania increased its global 5G presence to 15 markets, according to S&P Global, maintaining its position as the top 5G operator globally. Vodafone is transitioning from initial non-stand-alone (NSA) to stand-alone (SA) deployments alongside other multinational operators, including CK Hutchison Holdings and Orange SA.

Canada-France New Joint Committee Boosts Tech Research Collaboration

The Honorable François-Philippe Champagne, Minister of Innovation, Science and Industry, alongside Sylvie Retailleau, French Minister of Higher Education and Research, announced the creation of a joint committee between Canada and France to help strengthen the long-standing partnership between Canada and France in science, technology and innovation (STI).

"Canada and France will continue to foster greater collaboration in science, technology and innovation through the work of the new joint committee. Together, our two countries are helping create more opportunities for researchers, innovators and businesses to partner on projects that will shape the economy of the future," said Minister Champagne.

The committee will promote new opportunities for Canadian and French researchers and innovators to work together to find evidence-based solutions to global challenges. Co-chaired by Dr. Mona Nemer, Canada's chief science advisor, and Dr. Claire Giry, director general of research and innovation at the French Ministry of Higher Education and Research, the joint committee held its first meeting to officially launch its activities.

"The first meeting of this joint Science, Technology and Innovation Committee enables us to strengthen our cooperation in strategic areas such as quantum science and artificial intelligence. I would like to thank Minister Champagne, Global Affairs Canada and the two co-chairs' teams of this joint committee, Dr. Mona Nemer and Dr. Claire Giry, who have piloted the committee's preparatory work and who will preside over its future developments in areas of global health, energy and oceans," noted Minister Retailleau.

The joint committee includes a strategic council that aims to meet every six months to discuss priorities and opportunities for research collaboration.

AI Chatbots Attract Global Scrutiny

As a logical reaction to the potentially powerful capacity of artificial intelligence tools such as Microsoft-backed OpenAI's ChatGPT to have a negative impact on societies and businesses, US regulators have taken up the task of establishing new rules governing such technologies.

The US Department of Commerce, which is responsible for facilitating conditions for economic growth and opportunity in the country, has called on industry players' input to draft regulations pertaining to Al.

"Just as food and cars are not released into the market without proper assurance of safety, so too AI systems should provide assurance to the public, government, and businesses that they are fit for purpose," the Commerce Department said in a statement.

The US is home to the biggest innovators of tech and AI, including OpenAI, which

created ChatGPT, but has lagged in regulating the industry.

Separately, European authorities have deepened their inquiry into the chatbot days after Italy temporarily banned its use following OpenAI's disclosure of temporarily taking the tool offline on March 20 to fix a bug that allowed some users to see the subject lines from other users' chat histories.

Italian regulators have maintained that OpenAI has no legal basis to engage in massive data collection and questioned the way it is handling the information it has gathered.

European authorities, including those of France, Ireland and Germany, have since approached their Italian counterpart to try to establish a common position on ChatGPT. Even Canada's data regulator said it was opening an investigation into OpenAI.

China to Connect Europe, Middle East and Asia via \$500 Million Subsea Cable

State-owned telecom firms in China are developing a \$500 million undersea fiber-optic internet cable network to compete with a similar US-backed project, according to four people involved in the deal. The proposed EMA (Europe-Middle East-Asia) cable would connect Hong Kong to China's island province of Hainan and connect to Singapore, Pakistan, Saudi Arabia, Egypt and France.

According to the four sources, China Mobile, China Telecom and China Unicom are planning one of the world's most advanced and farreaching subsea cable networks in a bid to rival the US in their ongoing tech war. The EMA cable is a direct competitor to the SeaMeWe-6 cable under construction by US firm SubCom, which connects a similar route.

The cable, which will cost \$500 million to complete, will be manufactured and laid by the Chinese cable firm, HMN Technologies. Sources familiar with the development revealed that the firm will receive subsidies from the Chinese government to build the subsea cable. Chinese telecom firms are expected to own more than half of the new network, with foreign partners being courted to take ownership of the remaining network.

Contracts for the EMA cable project are expected to be finalized by the end of the year, with the cable going online by the end of 2025.

The Chinese carriers reportedly signed separate MoUs earlier this year with four telecoms, namely Orange, PTCL, Telecom Egypt and Zain Saudi Arabia, with talks also being held with Singtel.

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